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New species and records of *Lycoriella* Frey (Diptera, Sciaridae) from the Holarctic region

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Abstract

The following species of the genus *Lycoriella* Frey *sensu* Vilkamaa & Menzel from the Holarctic region are newly described and illustrated: *Lycoriella ampla* **sp. n.** (Canada: Ontario), *L. barkalovi* **sp. n.** (Russia: Krasnoyarsk region), *L. canningsi* **sp. n.** (Canada: British Columbia), *L. eurystylata* **sp. n.** (Canada: Quebec), *L. excavata* **sp. n.** (USA: Colorado), *L. jakovlevi* **sp. n.** (Russia: Karelia), *L. kinbasketi* **sp. n.** (Canada: British Columbia), *L. longa* **sp. n.** (USA: Colorado), *L. nivicola* **sp. n.** (Canada: Nunavut, NWT; Greenland), *L. pearyi* **sp. n.** (Greenland), *L. taimyrensis* **sp. n.** (Russia: Krasnoyarsk region) and *L. tundrae* **sp. n.** (Russia: Krasnoyarsk region). *Lycoriella parva* (Holmgren, 1869) is redescribed and illustrated and new faunistic records are given for some previously described species of *Lycoriella*. The newly described species raise the number of known species of *Lycoriella* from 38 to 50.

Key words: Biodiversity, distribution, Europe, morphology, North America, Sciaroidea, systematics, taxonomy

Introduction

The genus *Lycoriella* Frey, 1942 was re-classified by Vilkamaa & Menzel (2019) who divided the earlier *Lycoriella sensu lato* (Menzel & Mohrig 2000) into the genera *Lycoriella* (earlier *Lycoriella sensu stricto*), *Hemineurina* (earlier *L. inflata* group of the subgenus *Hemineurina*), *Trichocoelina* Vilkamaa & Menzel, 2019 (earlier *L. vitticollis* group of *Hemineurina*) and *Stenacanthella* Vilkamaa & Menzel, 2019 (replacement name for the subgenus *Coelostylina* Tuomikoski, 1960). Vilkamaa & Menzel (2019) also listed all species of these genera, including their synonyms.

The genus *Lycoriella* Frey, as currently defined in the sense of Vilkamaa & Menzel (2019), was known by 38 valid species, mostly described from the Palaearctic region (Vilkamaa & Menzel 2019). Now we focus especially on Holarctic *Lycoriella* species, mostly with northern (circumpolar) distribution. Up till now, only two species have been recorded in the Arctic, *Lycoriella attenuata* (Rübsaamen, 1898), described from Greenland and *Lycoriella parva* (Holmgren, 1869), described from Spitzbergen. The concept of *Lycoriella parva* has been clarified by Menzel & Mohrig (2000), who synonymized *Bradysia* (*Chaetosciara*) *difficilis* var. *obscuratipes* Frey, 1948 and *Lycoriella curvispina* Tuomikoski, 1960 with it. Although described twice (from Finland) after the original description (based on a female) from Spitzbergen by Holmgren (1869), there was a need for redescription, especially because none of the descriptions, or the paper by Edwards (1935) containing a record from Bear Island, are accompanied with adequate illustrations.

Lycoriella attenuata (Rübsaamen, 1898) and its junior synonym *latipennis* (Lundbeck, 1898) are known only from female holotypes from Greenland. Judging from the redescription of the species based on the holotype of *S. latipennis* Lundbeck (Menzel & Mohrig, 2000), none of our here newly described species can represent its male. From the whole Nearctic region, three species of *Lycoriella* were hitherto known, and only one, *Lycoriella abbreviata* (Walker, 1848), was known from the north, in the boreal zone of Ontario and in the Aleutian Islands. However, the female holotype of this species is in a very poor condition and the species concept cannot be adequately clarified without fresh material (Mohrig *et al.* 2013).

We aim here to improve knowledge of the Holarctic fauna of *Lycoriella* by describing 12 new species, by redescribing *Lycoriella parva* and by adding new faunistic data for some previously described species.

Material and methods

The material originated from pan trap or Malaise trap samples and all specimens were detected and picked out from unsorted sciarid or insect samples stored in ethanol from the institutions listed below. The specimens were mounted on microscope slides in Euparal, after dehydrating them in absolute ethanol. The study is based on males only. The terminology and methods of measuring and illustrating morphological structures with drawings follow Hippa & Vilkamaa (1991) and Hippa *et al.* (2010). The photographs of the slide-mounted specimens were taken with a Leica MC170 HD camera mounted on a Leica DM 4000 B LED research microscope, and the pencil drawings were made using a Leitz Diaplan microscope equipped with a drawing tube and finalized using indian ink. The figures were processed with Photoshop version CS5, CorelDraw2017 and CorelPhotopaint2017. Some BINs, the COI barcodes and additional distribution data were obtained from Wirta *et al.* (2016) and the Barcode of Life Data System (BOLD). In the latter case, the BOLD portals 'BIN Search' (http://v4.boldsystems.org/index.php/Public_BINsearch?searchtype=records) and 'Taxon Search' (http://v4.boldsystems.org/index.php/TaxBrowser_Home) were used.

The specimens studied were obtained from and are deposited in the following collections: Canadian National Collection, Ottawa, Canada (CNC), Institute of Animal Systematics and Ecology, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia (ISEA), Regional Museum of Lapland [= Lapin maakuntamuseo], Rovaniemi, Finland (LMM), Royal British Columbia Museum, Victoria, Canada (RBCM), Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (SDEI), Zoological Museum, Finnish Museum of Natural History, Helsinki, Finland (MZH) and Zoological Museum, Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark (ZMUC).

Descriptions of new species

Lycoriella ampla sp. n.

Figs 1A, 3A, 12A

Material studied. *Holotype male.* CANADA, Ontario, 7 mi S of Griffith, 10.VII.1991, B.E. Cooper (in MZH, <http://id.luomus.fi/GE.1808>). *Paratype.* CANADA, Ontario, Sudbury Co., Chapleau, Northeast Superior Forest, 47.573°N, 82.859°W, mature (99 years old) stand composed of 90% *Pinus banksiana* and 10% *Picea mariana* with understory shrub layer of *Vaccinium*, very wet with considerable bryophyte coverage, *Pinus banksiana* log, photoeclector, 22.VII.2013, R. Deady, 1 male (in SDEI).

Description. **Male. Head.** Face and antenna concolorous pale brown, maxillary palpus pale brown. Eye bridge 2 facets wide. Face with 11 setae. Clypeus with 1 seta. Maxillary palpus with 3 segments, 1st segment longer than 3rd segment, 2nd segment shortest; 1st segment with 3 setae, with large dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.8x as long as wide, neck slightly longer than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 2 setae. Proepisternum with 5 setae. Scutellum with 2 long, 2 moderately long and some short and fine setae. **Wing.** Hyaline. Length 2.1–2.2 mm. Width/length 0.45. Anal lobe small. Veins distinct, except for stM. c/w 0.60. R1/R 0.60. stM longer than fork of M. bM shorter than r-m, stCuA shortest. bM and r-m non-setose. Halteres of the studied specimen missing. **Legs.** Pale brown; setae pale. Fore tibial organ forming small patch of some setae in demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale, short and fine. **Hypopygium** (Fig. 1A). Brown, like abdomen. Intergonocoxal area moderately long, with 2 indistinct lobes each with 4 long setae. Gonocoxa broad, longer than gonostylus, with sparse and fine setosity. Gonostylus (Fig. 3A) wide, roundish laterally, convex medially, slightly narrowed apically; with short and dense setosity apically, with straight and conical apical tooth, with 1 megaseta on apical, 1 on dorsal, 1 on ventral side of apical tooth, with 3 subapical megasetae very near apical tooth; slightly differentiated whip-lash seta on apical quarter of gonostylus. Tegmen (Fig. 12A) slightly shorter than wide, roundish and membranous apically, straight and strongly sclerotized laterally, with long apodemes, and a large area of aedeagal teeth. Aedeagal apodeme rather short.

BIN. Unknown.

Discussion. *Lycoriella ampla* **sp. n.** has long antennae, a narrow eye bridge with one or two rows of facets, an extremely short maxillary palpus with a strongly deepened sensory pit (2nd and 3rd palpal segments are short and oval and together as long as 1st segment), basally narrowed wings, a very short wing vein R1, and a small demarcated fore tibial organ. The intergonocoxal area has apically two small groups of only four or five closely placed setae, the medial side of the gonostylus is straight, with a relatively short whip-lash seta on its apical half, and a slender apical megaseta. These characters are shared with *Lycoriella micria* Mohrig & Menzel, 1990. *Lycoriella ampla* differs from *L. micria* in having longer antennal flagellomeres, a strongly widened gonocoxa and gonostylus, apically roundish tegmen with straight sclerotized lateral sides, a nearly straight apical tooth, and a higher number of apical-subapical gonostylar megasetae (see the description). *Lycoriella micria* has a narrower gonocoxa and gonostylus with more widely placed and stronger subapical megasetae, a wider and straighter apex of the tegmen, more indistinct groups of setae in the intergonocoxal area, and a more strongly curved apical tooth of the gonostylus with only one apical and three to four subapical megasetae. The extremely voluminous gonostylus of *L. ampla*, with its extremely widened lateral side, resembles that of *Bradysiopsis vittigera* (Zetterstedt, 1851) and the unusually sclerotized lateral sides of its tegmen, unknown in any other known species of *Lycoriella*, resemble those of *Hemineurina riparia* (Holmgren, 1883) [see Figs 159 and 374 in Menzel & Mohrig (2000)].

Etymology. The name is Latin, *ampla*, widened, referring to the widened gonostylus of the male hypopygium.

Lycoriella barkalovi **sp. n.**

Figs 1B, 3B

Material studied. *Holotype male.* RUSSIA, Krasnoyarsk region, Taimyr Nature Reserve, Aru-Mas, 72.50°N, 101.94°E, pan trap, 12–22.VII.2010, A. Barkalov (in ISEA). *Paratypes.* RUSSIA, same data as holotype, 2 males (1 in MZH, <http://id.luomus.fi/GE.1810>; 1 in SDEI); same data but 9–20.VII.2010, 2 males (1 in MZH, <http://id.luomus.fi/GE.1809>; 1 in SDEI); Krasnodarsk region, Taimyr Peninsula, River Zakharova Rassokha, 72.70°N, 101.08°E, pan trap, 1–10.VII.2011, A. Barkalov, 1 male (in ISEA).

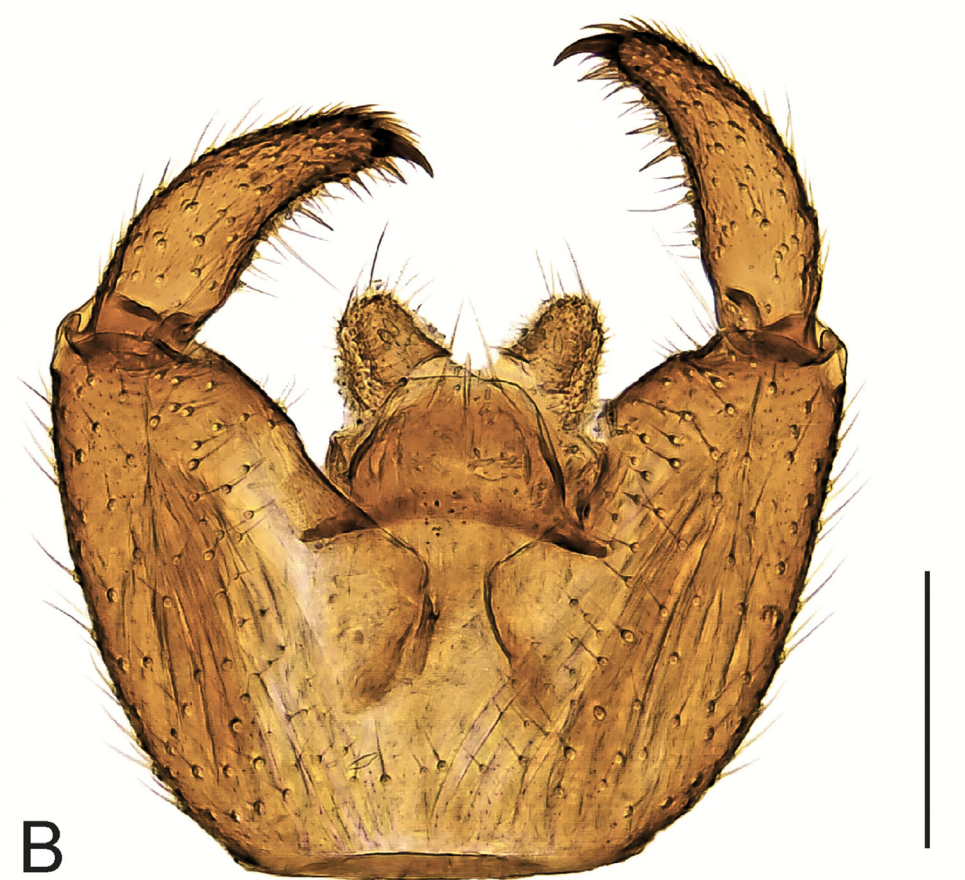
Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 3 facets wide. Face with 20–26 setae. Clypeus with 2–3 setae. Maxillary palpus with 3 segments, 1st segment longer than 3rd segment, 2nd segment shortest; 1st segment with 5–7 setae, with small dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.40–2.95x as long as wide, neck as long as wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 4–7 setae. Proepisternum with 3–10 setae. Scutellum with 2 long and some short and fine setae. **Wing.** Hyaline. Length 1.6–1.8 mm. Width/length 0.40. Anal lobe small. Veins distinct, except for stM. c/w 0.65–0.75. R1/R 0.70–0.85. stM longer than fork of M. bM longer than r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Brown; setae pale. Fore tibial organ forming large patch of many setae in demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and moderately long. **Hypopygium** (Fig. 1B). Brown, like abdomen. Intergonocoxal area short, without lobe or seta group. Gonocoxa narrow, longer than gonostylus, with dense and moderately long setosity, at medial margin short. Gonostylus (Fig. 3B) very narrow, widest basally, distinctly narrowed in basal third, impressed medially at the narrowed part; apex densely setose, with strong apical tooth; with 3–4 medial megasetae in apical third, megasetae narrow, slightly curved, slightly shorter than apical tooth, orientation variable; with well-differentiated long whip-lash seta in middle of gonostylus. Tegmen wider than long, truncate apically, curved basolaterally, weakly sclerotized, with small area of aedeagal teeth. Aedeagal apodeme rather short.

BIN. Unknown.

Discussion. *Lycoriella barkalovi* **sp. n.** is very similar to *L. lundstromi* (Frey, 1948): Both species have the eye bridge with two or three rows of facets, a large, basally bow-formed, distinctly demarcated fore tibial organ, lack the intergonocoxal lobe and have a very narrow gonostylus with a few megasetae (spines) latero-medially. In *Lycoriella barkalovi* the wing is much narrower due to the reduced anal lobe, bM is longer than r-m, coxae and legs are darker brown, the 2nd and 3rd palpal segments are subequal in length and the antennal flagellomeres have only some short sensilla. The medial margin and the membraneous area of the gonocoxa have a strikingly short and dense setosity. Furthermore, *L. barkalovi* has only three or four short and strong megasetae (spines) in the apical half of the gonostylus, the megasetae are all evenly directed basad, the apex of gonostylus is richly



A



B

FIGURE 1. Hypopygium, ventral. A. *Lycoriella ampla* sp. n. (holotype). B. *L. barkalovi* sp. n. (holotype). Scale 0.1 mm.

setose and the apical part of the gonostylus more impressed and appearing much narrower than the basal part. By comparison, in *L. lundstromi* the wing is broad with a well-developed anal lobe, bM and r-m are subequal in length, coxae and legs are yellowish (at least coxae yellow), the medial margin and the membranous area of gonocoxa have only a few weak setae, antennal flagellomeres have long, strongly curved and brownish setae (the vestiture of flagellomeres appears distinctly uneven; the 2nd segment of maxillary palpus short and the 3rd segment distinctly longer; the gonostylus is evenly impressed and narrowed towards apex; the gonostylar apex is less setose with weaker setae; the medial side of the gonostylus has four to six megasetae, one to three of which are shorter and located near the base of the apical tooth and three to five are longer, in the apical half of the gonostylus (often two megasetae on the middle of the gonostylus are directed towards each other and may cross).

Etymology. The species is named after the Russian dipterist A.V. Barkalov (Novosibirsk), who collected the type specimens.

Lycoriella canningsi sp. n.

Figs 2A, 3C

Material studied. *Holotype male*. CANADA, British Columbia, Lake Kinbasket, Canoe Reach of Kinbasket Reservoir, Malaise trap, 21.VI.2010, Cooper Beauchesne and Associates Ltd. (in RBCM).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 3 facets wide. Face with 12 long and short setae. Clypeus with 1 seta. Maxillary palpus with 3 segments; segment lengths not measurable in the specimen studied; 1st segment with 3 setae and dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 1.75x as long as wide, neck shorter than wide, longest setae slightly shorter than width of flagellomere. **Thorax.** Brown, setae pale. Anterior pronotum with 4 setae. Proepisternum with 2 setae. Scutellum with 2 long and some short setae. **Wing.** Hyaline. Length 1.5 mm. Width/length 0.50. Anal lobe small. Veins distinct, except for stM. c/w 0.55. R1/R 0.65. bM shorter than r-m, stCuA shortest. stM subequal to fork of M. bM and r-m non-setose. Halter yellow. **Legs.** Pale brown, coxae yellow; coxal setae pale. Fore tibial organ forming very small patch of few setae in demarcated depression. Fore tibial spur longer than apical width of tibia. **Abdomen.** Pale brown; setae pale and long. **Hypopygium** (Fig. 2A). Pale brown, like abdomen. Intergonocoxal area with distinct broad lobe with apical setae. Gonocoxa longer than gonostylus, with rather short and sparse vestiture. Gonostylus (Fig. 3C) wide, narrowed apically, impressed medially, with dense apical setosity, with long and narrow apical tooth, with 4 long and straight medial megasetae in apical fourth; with indistinct whip-lash seta in middle of gonostylus. Tegmen slightly sclerotized, wider than long, with small area of aedeagal teeth. Aedeagal apodeme rather strong.

BIN. Unknown.

Discussion. *Lycoriella canningsi* sp. n. belongs to the group of *Lycoriella* which share short and broad wings, a small fore tibial organ, a large *Trichocoelina*-like and medially impressed gonostylus, four conical basomedially directed and slightly curved megasetae as well as a large, broad and roundish intergonocoxal lobe of with strong setae.

Among these species, *Lycoriella canningsi* most resembles the Palearctic *L. latilobata* Menzel & Mohrig, 2000 because of its pale body setosity, the eye bridge with two to three rows of facets, relatively densely setose antennal flagellomeres with only few sensilla, a similarly long 4th flagellomere and a fairly long maxillary palpus. *Lycoriella canningsi* differs from *L. latilobata* in its wider gonostylus, a shorter whip-lash seta basally on the medial margin of the gonostylus, a longer apical tooth placed at the very apex of the gonostylus, the broad and short tegmen, stronger gonostylar megasetae, and a longer intergonocoxal lobe with weaker setae (all setae are curved and not spine-like). By comparison, *L. latilobata* has a distinctly narrower gonostylus, a longer whip-lash seta, the apical tooth placed subapically on the medial side of the gonostylus, the tegmen much longer and conical, shorter and narrower gonostylar megasetae and a shorter, a bow-shaped intergonocoxal lobe with apical margin with dense, straight, spine-like setae.

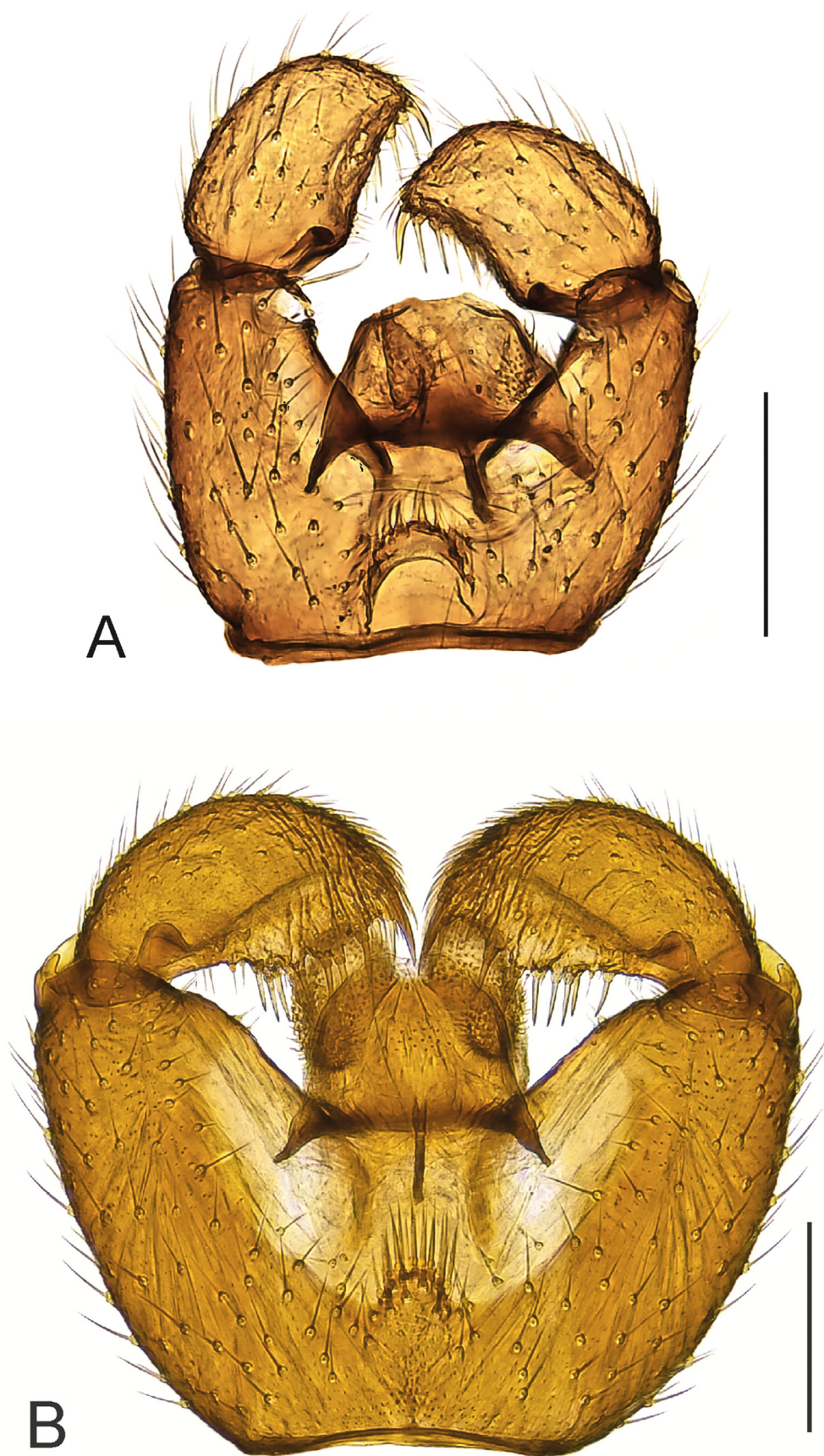


FIGURE 2. Hypopygium, ventral. **A.** *Lycoriella canningsi* **sp. n.** (holotype). **B.** *L. excavata* **sp. n.** (holotype). Scale 0.1 mm.

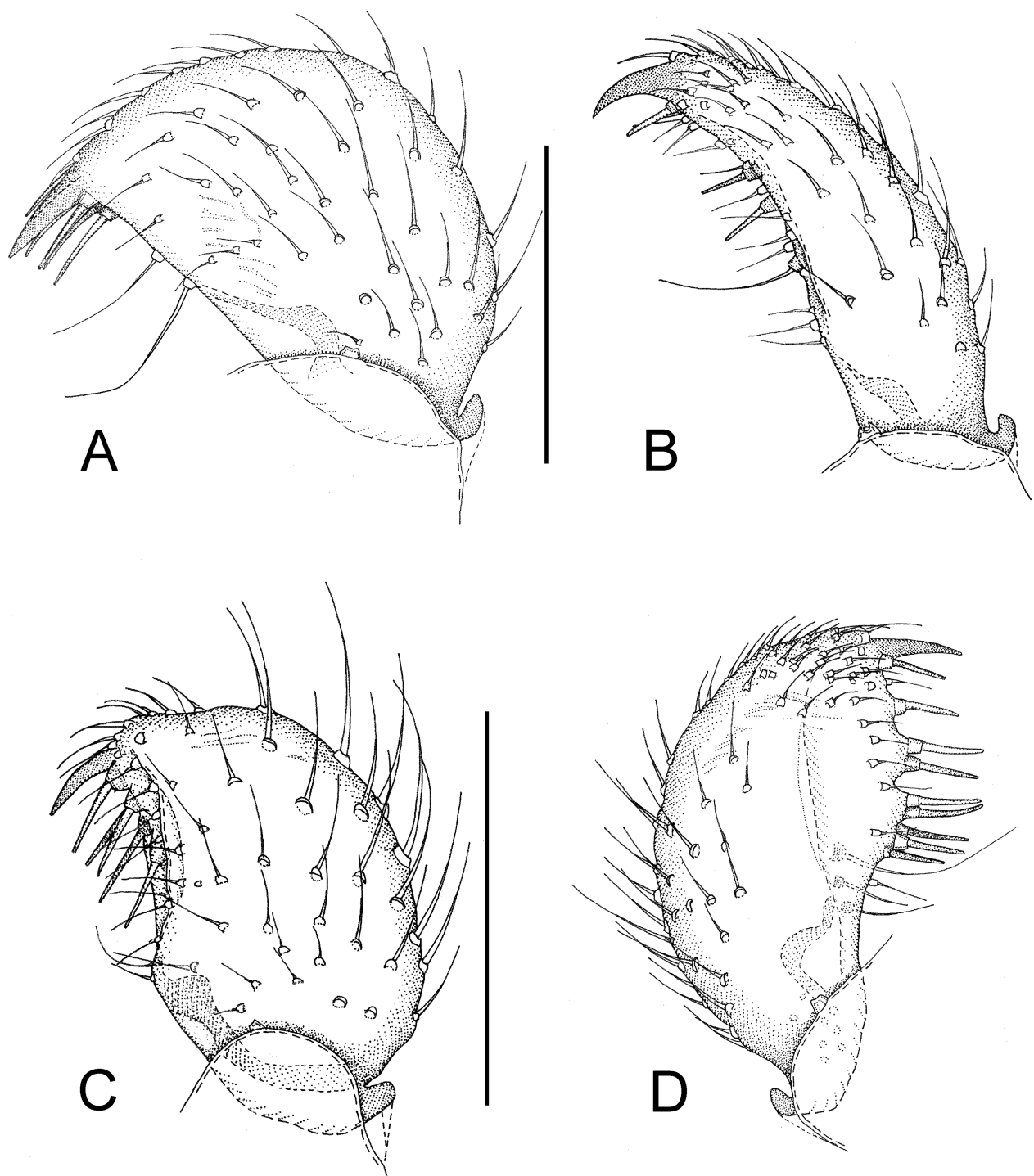


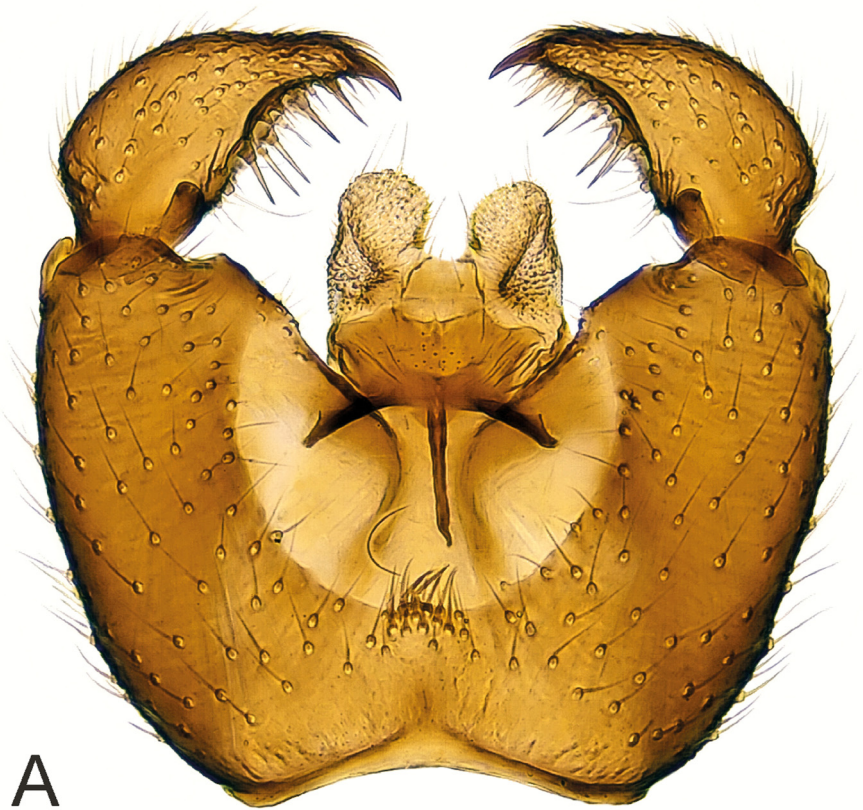
FIGURE 3. Gonostylus, ventral. **A.** *Lycoriella ampla* **sp. n.** (holotype). **B.** *L. barkalovi* **sp. n.** **C.** *L. canningsi* **sp. n.** (holotype). **D.** *L. excavata* **sp. n.** (holotype). Scale 0.1 mm.

Etymology. The species is named after the Canadian entomologist Robert A. Cannings, formerly the Curator of Entomology in the Royal British Columbia Museum, Victoria, BC.

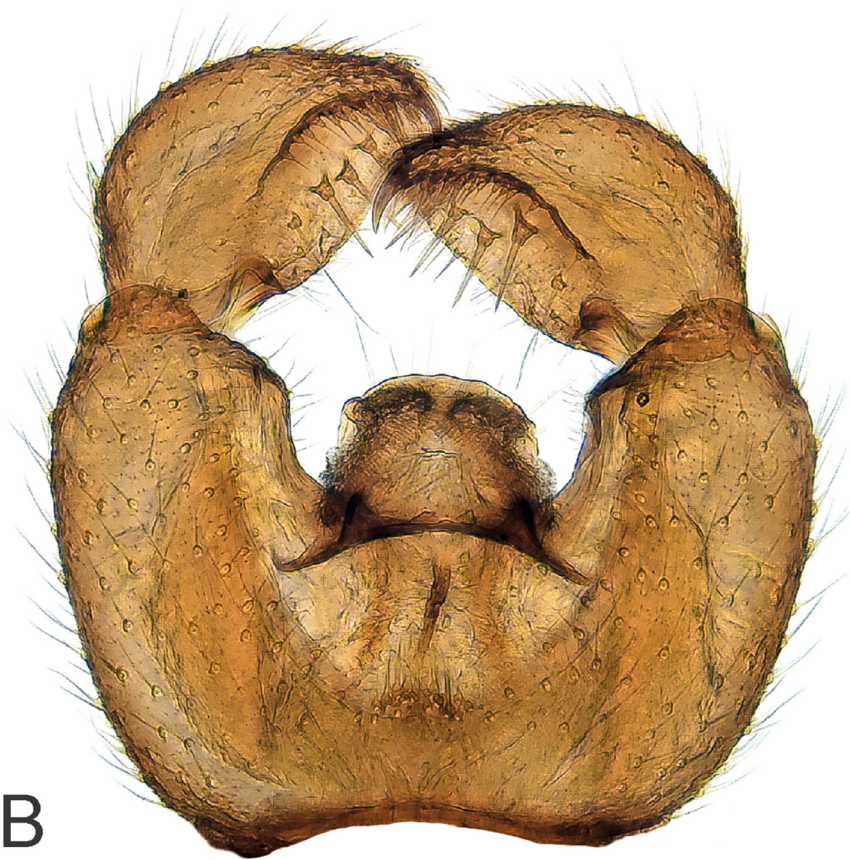
***Lycoriella eurystylata* sp. n.**

Figs 4B, 6C, 13A

Material studied. *Holotype male.* CANADA, Quebec, Old Chelsey, 3.VIII.1958, J.R. Vockeroth (in CNC).



A



B

FIGURE 4. Hypopygium, ventral. **A.** *Lycoriella acutostylia* Mohrig & Menzel, 1990 (from Finland, Ilmajoki). **B.** *L. eurystylata* sp. n. (holotype). Scale 0.1 mm.

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 3 facets wide. Face with 14 setae. Clypeus with 4 setae. Maxillary palpus with 3 segments, 1st segment as long as 3rd segment, 2nd segment shortest; 1st segment with 5 setae, with small dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.2x as long as wide, neck slightly shorter than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 5 setae. Proepisternum with 8 setae. Scutellum with 2 long and some short and fine setae. **Wing.** Fumose. Length 1.7 mm. Width/length 0.45. Anal lobe small. Veins distinct, except for stM. c/w 0.75. R1/R not detectable in the specimen studied. stM shorter than fork of M. bM and r-m subequal in length, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Brown; setae pale. Fore tibial organ forming large patch of many setae in demarcated depression. Fore tibial spur slightly shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and moderately long. **Hypopygium** (Fig. 4B). Brown, like abdomen. Intergonocoxal area rather long, with short setose lobe. Gonocoxa longer than gonostylus, slightly roundish laterally, with rather dense and fine setosity. Gonostylus (Fig. 6C) widest subbasally, narrowed towards apex, strongly impressed medially, densely setose apically, with strong and curved apical tooth; with 5 medial megasetae in apical half, megasetae slender, long and straight, oblique, the apicalmost (with sockets) shorter than the others, as long as apical tooth; with well-differentiated long whip-lash seta in basal third of gonostylus. Tegmen (Fig. 13A) much wider than long, smoothly curved and membranous apically, straight laterally, sclerotized basolaterally, with small area bearing a few aedeagal teeth. Aedeagal apodeme moderately long.

BIN. Unknown.

Discussion. *Lycoriella eurystylata* **sp. n.** resembles *L. taimyrensis* **sp. n.** and *L. tundrae* **sp. n.** in having the tegmen smoothly curved apicolaterally, whereas *L. acutostylia* Mohrig & Menzel, 1990 [described in Menzel *et al.* (1990)], *L. jakovlevi* **sp. n.** and *L. kinbasketi* **sp. n.** have the tegmen distinctly angled apicolaterally (Fig. 13). *L. eurystylata* differs from *L. taimyrensis* and *L. tundrae* in having the tegmen very short, strongly sclerotized basolaterally, semicircular apically and without tooth-like structures, whereas the other two have their tegmen only slightly sclerotized laterally, less curved apically and with tooth-like structures. Furthermore, *L. eurystylata* has five, *L. tundrae* four and *L. taimyrensis* eight to nine gonostylar megasetae and the fore tibial organ of *L. eurystylata* is more distinctly demarcated than that of *L. taimyrensis* and *L. tundrae*.

L. eurystylata is similar to *L. acutostylia*, *L. jakovlevi* and *L. kinbasketi* in having rather long antennal flagellomeres (4th flagellomere 2.1–2.3 times as long as wide), whereas *L. taimyrensis* and *L. tundrae* have shorter flagellomeres (4th flagellomere 1.4–1.6 times as long as wide). To distinguish *L. taimyrensis* and *L. tundrae*, see under the former, and to distinguish *L. acutostylia*, *L. jakovlevi* and *L. kinbasketi*, see under *L. jakovlevi* **sp. n.**

Etymology. The name is derived from the Greek words *eury*s, broad, and *stylos*, style, referring to the thick gonostylus of the male hypopygium.

Lycoriella excavata **sp. n.**

Figs 2B, 3D, 12B

Material studied. *Holotype male.* USA, Colorado, Laramer Co., Pinewood Springs, 40.2677°N, 105.3678°W, Malaise trap, 26.VII–7.IX.2014, S. & B. Fitzgerald (in MZH, <http://id.luomus.fi/GE.1811>).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 1–2 facets wide. Face with 27 setae. Clypeus with 1 seta. Maxillary palpus with 3 segments, 1st segment longer than 3rd segment, 2nd segment shortest; 1st segment with 3 setae, with deep dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.8x as long as wide, neck slightly longer than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 9 setae. Proepisternum with 10 setae. Scutellum with 2 moderately long and some short and fine setae. **Wing.** Fumose. Length 1.9 mm. Width/length 0.40. Anal lobe small. Veins distinct, except for stM. c/w 0.65. R1/R 0.75. stM longer than fork of M. bM as long as r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Pale brown; setae pale. Fore tibial organ forming large patch of setae in demarcated depression. Fore tibial spur longer than apical width of tibia. **Abdomen.** Pale brown; setae pale, short and weak. **Hypopygium** (Fig. 2B). Brown, like abdomen. Intergonocoxal area moderately long, with semicircular setose lobe. Gonocoxa narrow and long, longer than gonostylus, with sparse, rather short setosity. Gonostylus (Fig. 3D) widest subapically, slightly narrowed towards apex, deeply excavated

dorsally; densely setose apically, with long and narrow apical tooth, with 1 subapical and 7–8 medial megasetae on ventral margin of apical half of gonostylus; with long whip-lash seta in middle. Tegmen (Fig. 12B) longer than wide, slightly notched apically, weakly sclerotized laterally, with area of minute teeth apicoventrally, with area of small aedeagal teeth. Aedeagal apodeme moderately long.

BIN. Unknown.

Discussion. *Lycoriella excavata* **sp. n.** with its subapically widened, lobe-shaped gonostyli resembles *Lycoriella piristylata* Vilkamaa, Hippa & Heller, 2013, which has (in contrast to the original description) also a palpal sensory pit and therefore belongs to *Lycoriella* Frey. In contrast to *Lycoriella excavata* **sp. n.**, in *L. piristylata* a long whip-lash seta is missing, the intercoxal lobe is small (or absent in some specimens), the apical tooth is significantly shorter or completely reduced and the tegmen is short and trapezoidal (Vilkamaa *et al.* 2013: fig. 3A–C). *Lycoriella excavata* **sp. n.** (Fig. 2B) also differs from this species in its ventrally enlarged lobe-shaped gonostylus with a very deep dorsal excavation, all medial megasetae of the gonostylus on its ventral margin, and its tegmen with apicolateral teeth. Apicolateral teeth of the tegmen are currently known only in *Lycoriella taimyrensis* described here (Fig. 13E), in some species of *angustostylata* species group in *Bradysia* Winnertz, 1867 (Menzel & Heller 2005; Mohrig 2016), as well in *Odontosciara* Rübsaamen, 1908 (Mohrig 2003).

Etymology. The name is a Latin adjective, *excavata*, meaning hollowed, and refers to the strongly hollowed gonostylus.

Lycoriella jakovlevi **sp. n.**

Figs 5A, 6A, 13C, 14B

Material studied. *Holotype male.* RUSSIA, Karelia, Kivach, poplar stand, pitfall trap, 11–13.VI.1986, J. Jakovlev, (in MZH, <http://id.luomus.fi/GE.1812>). *Paratypes.* RUSSIA, same locality as holotype but pine-lichen habitat, Malaise trap, 5–7.VIII.1986, J. Jakovlev, 1 male (in MZH, <http://id.luomus.fi/GE.1813>); same data as previous but window trap, 8–10.VII.1985, 1 male (in SDEI).

Description. **Male. Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2 facets wide. Face with 26 setae. Clypeus with 1 seta. Maxillary palpus with 3 segments, 1st segment longer or as long as 3rd segment, 2nd segment shortest; 1st segment with 4 setae, with moderate dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.10–2.25x as long as wide, neck much shorter than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 4 setae. Proepisternum with 4–7 setae. Scutellum with 2 moderately long and some short and fine setae. **Wing.** Fumose. Length 1.4 mm. Width/length 0.40–0.45. Anal lobe small. Veins distinct, except for stM. c/w 0.70–0.75. R1/R 0.70–0.90. stM as long as fork of M. bM longer than r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Brown; setae pale. Fore tibial organ forming moderate patch of many setae in demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and moderately long. **Hypopygium** (Fig. 5A). Brown, like abdomen. Intergonocoxal area (Fig. 14B) moderately long, with semicircular setose lobe. Gonocoxa longer than gonostylus, rather straight laterally, with dense and moderately long setosity, shorter on medial margin. Gonostylus (Fig. 6A) widest subbasally, gradually tapered towards apex, strongly impressed medially, densely setose apically, with a strong slightly curved apical tooth, 2 pairs of medial megasetae on apical third, megasetae slender, shorter than apical tooth, slightly procurved; with well-differentiated long whip-lash seta in middle of gonostylus. Tegmen (Fig. 13C) as long as wide, with distinct and sharp apicolateral angles; surrounded by hyaline membrane laterally (and ventrally?), membranous apically, sclerotized laterally, with indistinct sclerotizations dorsally, with small area of aedeagal teeth. Aedeagal apodeme rather short.

BIN. Unknown.

Discussion. This species is characterised by its apically gradually strongly narrowed gonostylus with only four to five medial megasetae and its lack of any apical megasetae. *Lycoriella jakovlevi* **sp. n.** resembles *L. acutostylia* Menzel & Mohrig, 1990, *L. kinbasketi* **sp. n.** and *L. tundrae* **sp. n.** *Lycoriella jakovlevi* is closer to *L. acutostylia* and *L. kinbasketi* and differs from *L. tundrae* in having the tegmen distinctly angled apicolaterally. The tegmen of *Lycoriella jakovlevi* is about as long as wide, whereas the tegmen of *L. acutostylia* and *L. kinbasketi* is shorter than wide. Furthermore, the intergonocoxal lobe *L. acutostylia* is very short, and hardly produced from the level of the basomedial margin of the gonocoxae, whereas *L. jakovlevi* has a longer lobe, nearly semi-circular, and *L. kinbasketi*'s lobe is long but narrowed apically (Fig. 14). Unlike *Lycoriella jakovlevi* and *L. kinbasketi*, the two basalmost

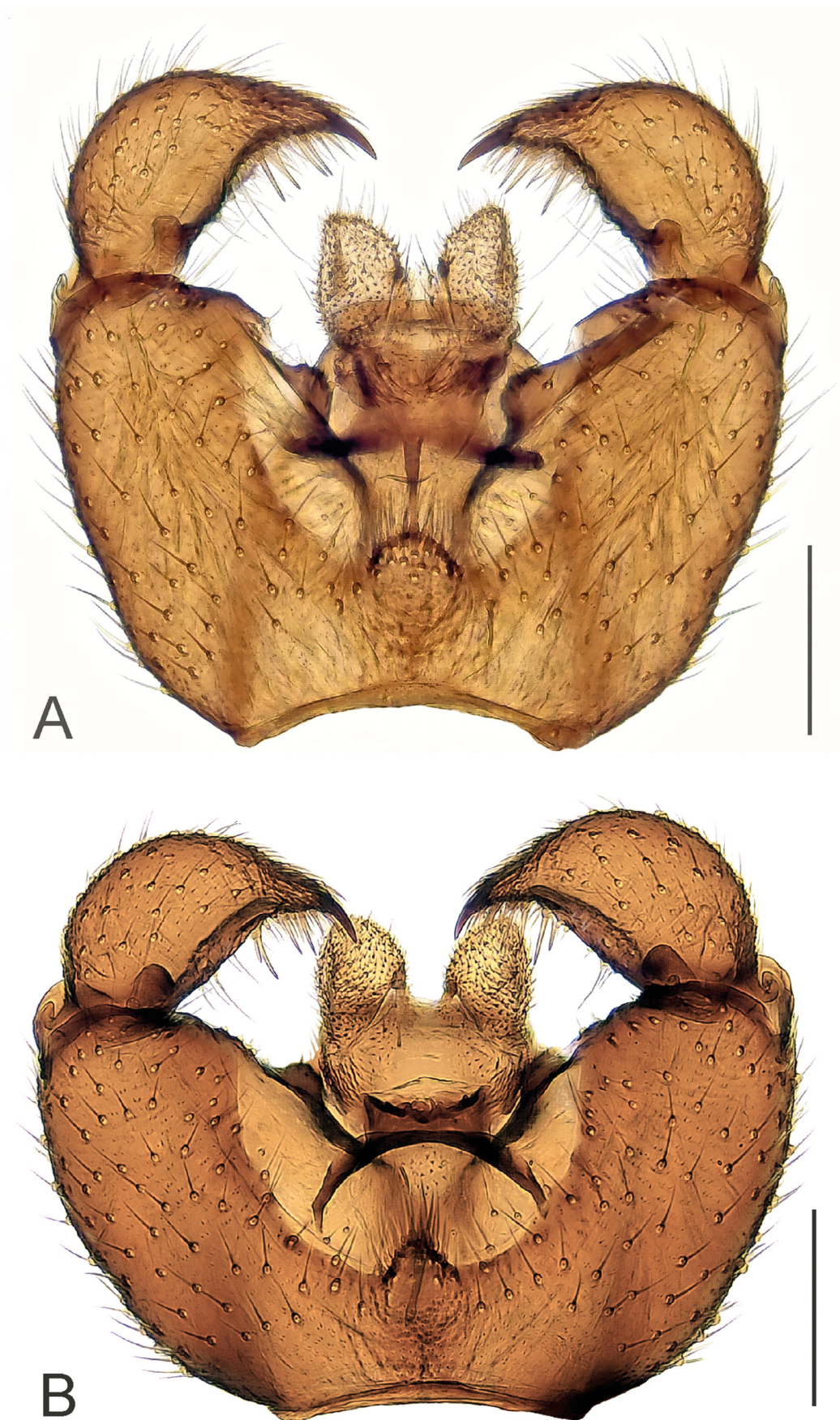


FIGURE 5. Hypopygium, ventral. **A.** *Lycoriella jakovlevi* sp. n. (holotype). **B.** *L. kinbasketi* sp. n. (holotype). Scale 0.1 mm.

medial megasetae of the gonostylus of *L. acutostylia* are not parallel, but diverge, the whip-lash setae are positioned more basally, and the basal rim of the hypopygium turned caudad medially (Figs 4A, 6B, 6C). The gonostyli of *Lycoriella jakovlevi* and that of *L. kinbasketi* are almost identical, both having four gonostylar megasetae on the apical quarter of the gonostylus but *L. jakovlevi* has a longer apical tooth of gonostylus. The differences to *Lycoriella eurystylata* **sp. n.** and *L. taimyrensis* **sp. n.** are discussed elsewhere.

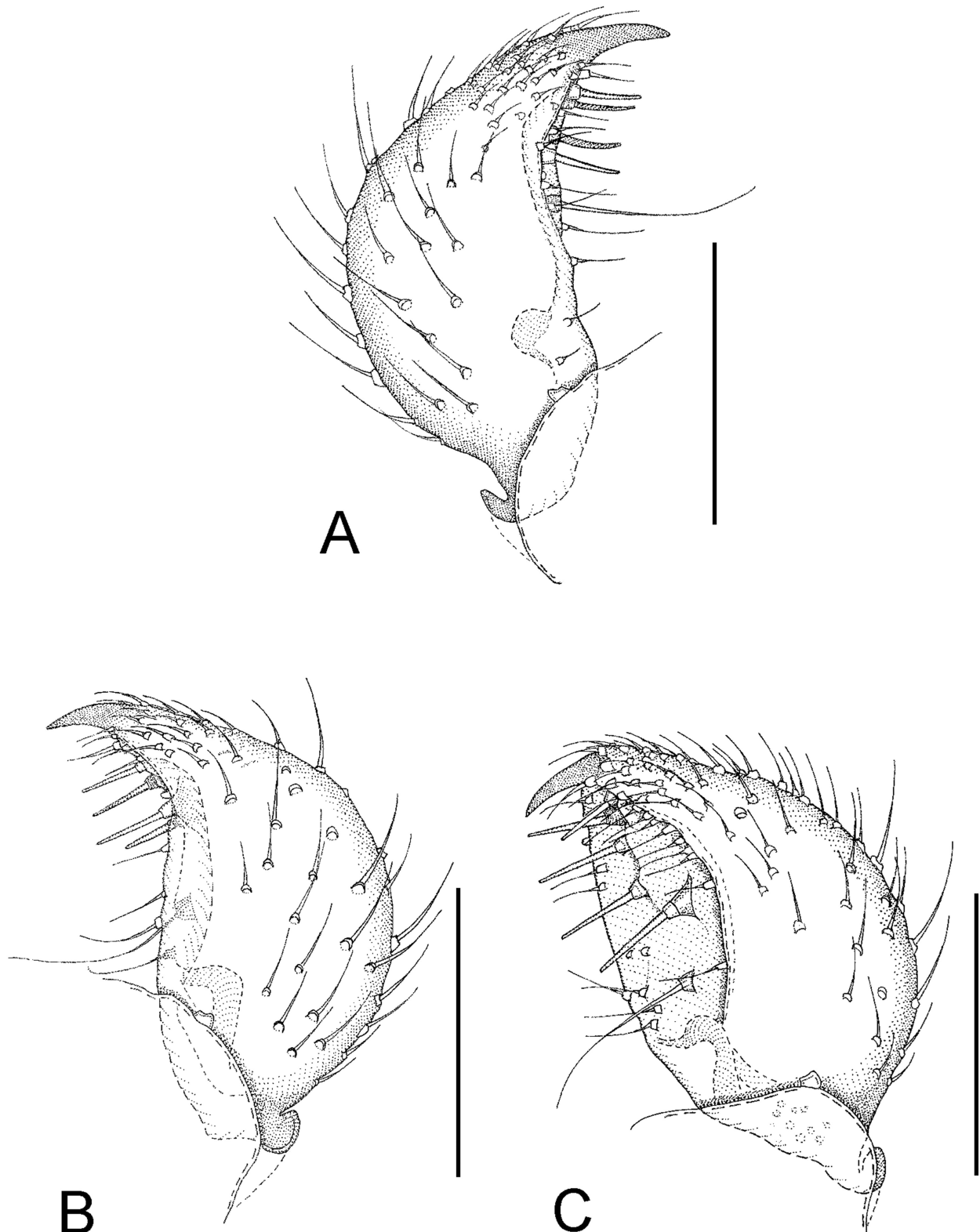


FIGURE 6. Gonostylus, ventral. **A.** *Lycoriella jakovlevi* **sp. n.** (holotype). **B.** *L. kinbasketi* **sp. n.** (holotype) **C.** *L. eurystylata* **sp. n.** (holotype). Scale 0.1 mm.

Etymology. The species is named after the Finnish mycetophilid specialist Jevgeni Jakovlev (Finnish Environment Institute, Helsinki, Finland), who collected the type specimens.

***Lycoriella kinbasketi* sp. n.**

Figs 5B, 6B, 13D, 14C

Material studied. *Holotype male.* CANADA, British Columbia, Canoe Reach of Kinbasket Reservoir near Valemound, Malaise trap, 21.VI.2010, V. Prigmore, V. Smith., N. Shaw & H. Schindler (in MZH, <http://id.luomus.fi/GE.1814>). *Paratype.* CANADA, same data as holotype, 1 male (in SDEI).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2 facets wide. Face with 25 setae. Clypeus with 3 setae. Maxillary palpus with 3 segments, 1st segment as long as 3rd segment, 2nd segment shortest; 1st segment with 4–5 setae, with a moderate dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.10–2.30x as long as wide, the longest setae longer than the width of the flagellomere, neck shorter than wide. **Thorax.** Brown; setae pale. Anterior pronotum with 5–8 setae. Proepisternum with 8–9 setae. Scutellum with 2 moderately long and some short and fine setae. **Wing.** Fumose. Length 1.4 mm. Width/length 0.40. Anal lobe small. Veins distinct, except for stM. c/w 0.70–0.75. R1/R 0.45. stM as long as fork of M. bM longer than r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Brown, coxae yellow; setae pale. Fore tibial organ forming moderate patch of many setae in demarcated depression. Fore tibial spur shorter than tibial width. **Abdomen.** Pale brown; setae pale and moderately long. **Hypopygium** (Fig. 5B). Brown, like abdomen. Intergonocoxal area (Fig. 14C) moderately long, with a triangular setose lobe. Gonocoxa longer than gonostylus, roundish laterally, with dense and short setosity. Gonostylus (Fig. 6B) widest subbasally, strongly narrowed towards apex, strongly impressed dorsally, densely setose apically, with a rather short and strong apical tooth; with 4 medial megasetae at apical fourth, 2 basalmost ones close to each other, megasetae slender, nearly straight; with well-differentiated long whip-lash seta near the middle of the gonostylus. Tegmen (Fig. 13D) surrounded by hyaline membrane laterally (and ventrally?); shorter than wide wide, membranous apically, sclerotized laterally, with indistinct sclerotizations dorsomedially, with a large area of aedeagal teeth. Aedeagal apodeme moderately long.

BIN. Unknown.

Discussion. See under *Lycoriella eurystylata* sp. n. and *L. jakovlevi* sp. n.

Etymology. The species is named after the 19th-century Chief Kinbasket of the Columbia River Shushap people.

***Lycoriella longa* sp. n.**

Figs 7A, 9A

Material studied. *Holotype male.* USA, Colorado, Laramer Co., Pinewood Springs, Malaise trap, 12.IX–1.XII.2014, S. & B. Fitzgerald (in MZH, <http://id.luomus.fi/GE.1815>). *Paratypes.* USA, Colorado, Pinewood Springs, 40.259476°N, 105.360503°W, wood along small creek, Malaise trap, 7.IX–12.X.2014, S. & J. Fitzgerald, 5 males (3 in MZH, <http://id.luomus.fi/GE.1816>, <http://id.luomus.fi/GE.1817> and <http://id.luomus.fi/GE.1818>; 2 in SDEI).

Description. Male. **Head.** Face paler brown than antenna, maxillary palpus pale brown. Eye bridge 2–3 facets wide. Face with 15–30 setae. Clypeus with 2–5 setae. Maxillary palpus with 3 segments, 1st segment as long as 3rd segment, 2nd segment shortest; 1st segment with 5 setae, with small dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.35–2.50x as long as wide, neck shorter than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 4–6 setae. Proepisternum with 6–11 setae. Scutellum with 2 moderate and some short and fine setae. **Wing.** Hyaline. Length 1.4 mm. Width/length 0.45. Anal lobe rather small. Veins distinct, except stM. c/w 0.55–0.70. R1/R 0.65–85. stM shorter than fork of M. bM shorter, longer or as long as r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Yellow; setae pale. Fore tibial organ forming large patch of many setae in demarcated depression. Fore tibial spur as long as apical width of tibia. **Abdomen.** Pale brown; setae pale, short and fine. **Hypopygium** (Fig. 7A). Brown, like abdomen. Intergonocoxal area moderate, with short setose lobe. Gonocoxa narrow, much longer than gonostylus, with dense and short setosity. Gonostylus (Fig. 9A) very narrow, evenly narrowed towards apex, strongly impressed medially;

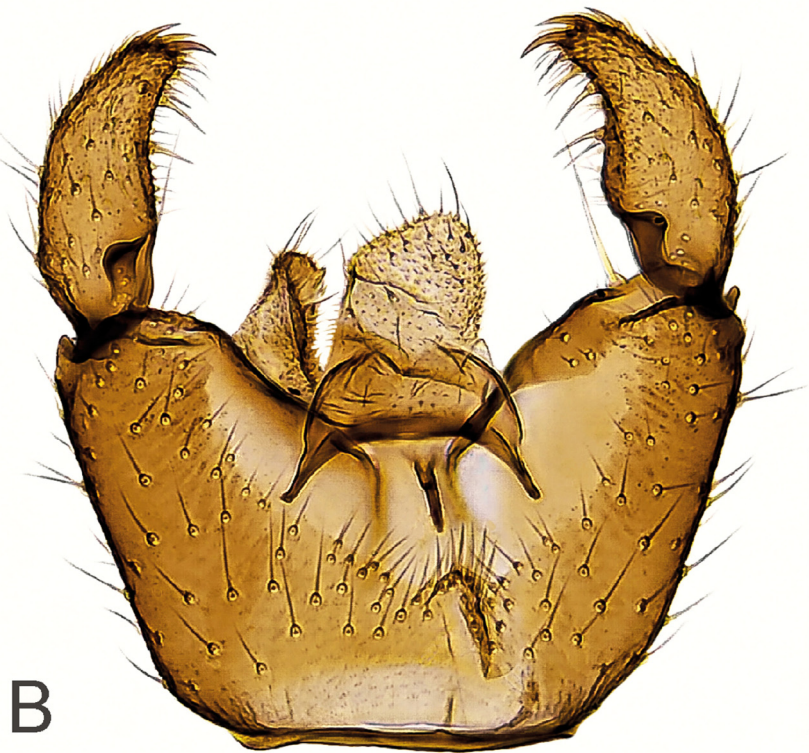
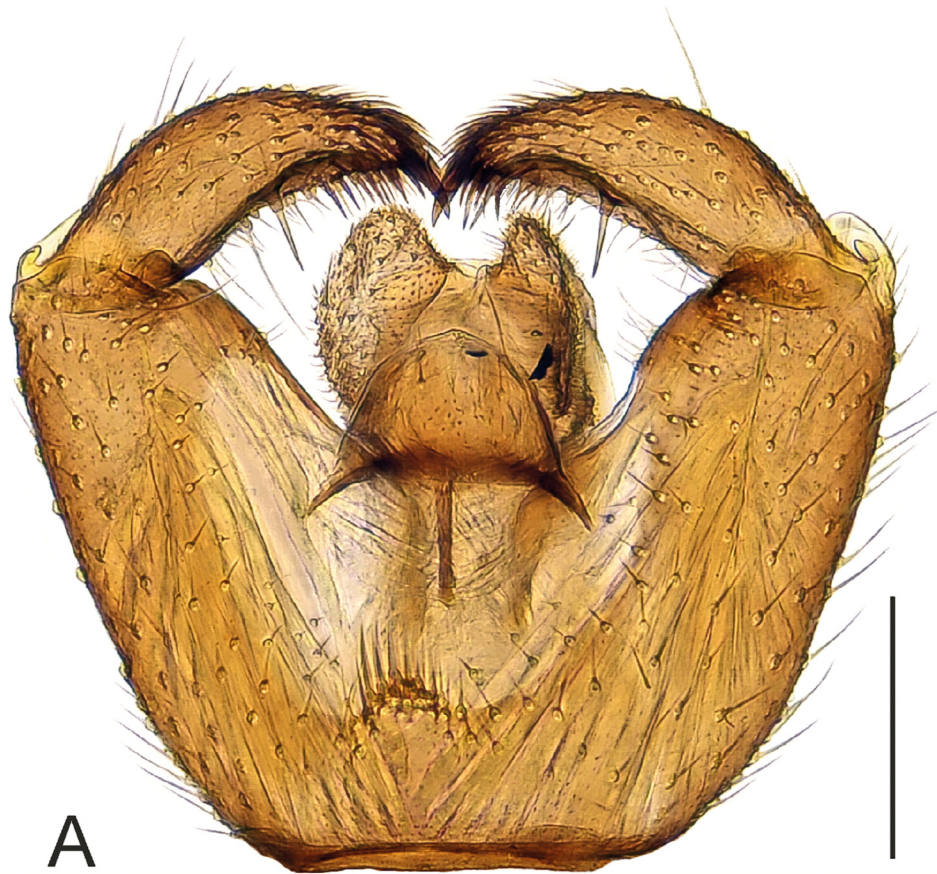


FIGURE 7. Hypopygium, ventral. **A.** *Lycoriella longa* **sp. n.** (holotype). **B.** *L. parva* (Holmgren, 1869) (from USA, Mt. Mansfield). Scale 0.1 mm.

densely setose apically, with long apical tooth; with 2 subapical and 3 medial megasetae in medial impression, 2 of medial megasetae close to subapical megasetae, 1 longer and stronger one near middle of gonostylus, megasetae straight or very slightly curved, all shorter than apical tooth; with well-differentiated long whip-lash seta in middle of gonostylus. Tegmen broadly conical, membranous apically, weakly sclerotized laterally, with small area of aedeagal teeth. Aedeagal apodeme rather long.

BIN. Unknown.

Discussion. With its slender gonostylus, *Lycoriella longa* **sp. n.** possesses the typical gonostylar structure of the genus, but differs in having its gonostylus distinctly impressed dorsomedially and in having a single conspicuous medial megaseta in the middle of the gonostylus, well separated from the other megasetae.

Etymology. The name is a Latin adjective, *longa* (long), referring to the long gonostylus, the long medial megaseta and the long antenna.

Lycoriella nivicola **sp. n.**

Figs 8A, 9B

Literature. *Lycoriella* (*Lycoriella*) **sp. n.**—Wirta *et al.* (2016): supporting information, table S1, fig. S1.

Material studied. *Holotype male.* CANADA, Quebec, Great Whale River, 4–9.VIII.1949, J.R. Vockeroth, 1 male (in CNC). *Paratypes.* CANADA, same data as holotype, 1 male (in MZH, <http://id.luomus.fi/GE.1899>); Nunavut, Ellesmere Island, ‘Fosheim Pns.’ [= Fosheim Peninsula], Hot Weather Creek, 79°58’N, 84°28’W, 22.VII.1990, F. Brodo (in MZH, <http://id.luomus.fi/GE.1821>); Nunavut, Ellesmere Island, Alert, 82.30.096°N, 62.20.902°W, 31.VII.1963, J.R. Vockeroth, 1 male (in CNC); Quebec, Payne Bay, 19.VII.1958, J. R. Vockeroth, 1 male (in CNC); N.E. GREENLAND, Kap København, 68°30’N, 22°30’W, VII.1986, J. Böcher (in ZMUC); same data but 68°30’N, 22°34’W 13.VII.1986, 1 male (in ZMUC); Zackenberg Valley, Northeast Greenland National Park, 74°28’N, 20°34’W (UTM 8265758:05147529), 14 m, Malaise trap, 2–11.VII.2011, T. Roslin & G. Varkonyi, 1 male (hypopygium only) (in MZH, <http://id.luomus.fi/GE.1819>, BOLD sample ID GRPV15, sequence ID GRAFW2354-13); same data but UTM 82654758:0514752, 18–24.VI.2011, 1 male (in MZH, <http://id.luomus.fi/GE.1825>); same data but UTM 8264450:0512722, 35 m, 12–20.VII.2011, 1 male (in SDEI); same locality as previous but without date, J. Böcher, 1 male (in ZMUC); N. GREENLAND, ‘Nedre Midsommer Sø’ [= Nedre Midsommer Sø], 82.0980°N, 35.9498°W, 10.VII.1966, Canadian Peary Land Expedition, 1 male (in MZH, <http://id.luomus.fi/GE.1820>); same data but 14.VII.1966, 1 male (in SDEI); E. GREENLAND, Jameson Land, Muslingeelvadal, 71°23’N, 24°38’W, 1994, J. Böcher, 1 male (in ZMUC); GREENLAND, ‘Sydl. Zool. Station’ [= Sydlig Zoologisk Station], ‘597’, 28.VI.1974, collector unknown, 1 male (in ZMUC); RUSSIA, Arkhangelsk oblast, Yamalo-Nenets Autonomous Okrug, near Seyakh, 70.7788°N, 72.0750°E, nival meadow, Malaise trap, 13–29.VII.2014, N. Zubryi, 1 male (in MZH, <http://id.luomus.fi/GE.1900>).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2–3 facets wide. Face with 32–45 setae. Clypeus with 1–2 setae or non-setose. Maxillary palpus with 3 segments, 1st segment longer than 3rd segment, 2nd segment shortest; 1st segment with 4–6 setae, with large dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.3–2.7x as long as wide, neck shorter than wide, longest setae as long as width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 4–7 setae. Proepisternum with 6–13 setae. Scutellum with 2 moderate and some short and fine setae. **Wing.** Hyaline. Length 2.1–2.5 mm. Width/length 0.40. Anal lobe small. Veins distinct, except for stM. c/w 0.60–0.75. R1/R 0.6–1.0. stM longer than fork of M. bM and r-m subequal in length, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Yellow. Fore tibial organ forming large distinct patch of fine setae in demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and short. **Hypopygium** (Fig. 8A). Brown, like abdomen. Intergonocoxal area moderately long, with wide setose lobe. Gonocoxa wide, longer than gonostylus, with sparse setosity, shortest in apical quarter. Gonostylus (Fig. 9B) long and narrow, narrowed apically, impressed medially; with short setosity, densely setose apically, with strong apical tooth and 10–12 medial megasetae, megasetae straight, shorter than apical tooth; with well-differentiated whip-lash seta on basal third of gonostylus. Tegmen longer than wide, apically roundish, straight laterally, weakly sclerotized, with area of small aedeagal teeth. Aedeagal apodeme long and strong.



A



B

FIGURE 8. Hypopygium, ventral. **A.** *Lycoriella nivicola* **sp. n.** (paratype from Greenland). **B.** *L. pearyi* **sp. n.** (holotype). Scale 0.1 mm.

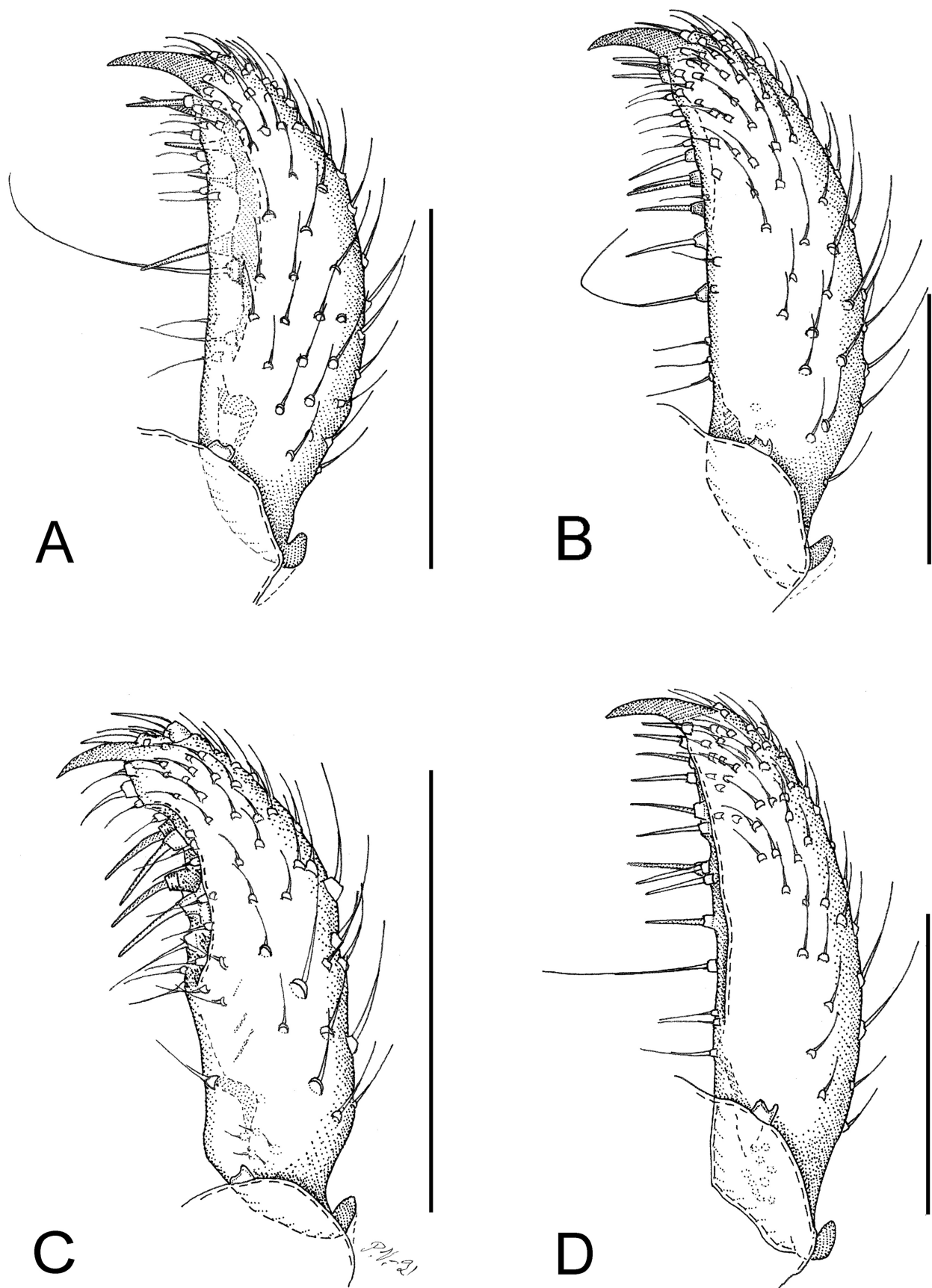


FIGURE 9. Gonostylus, ventral. **A.** *Lycoriella longa* sp. n. (paratype). **B.** *L. nivicola* sp. n. (holotype). **C.** *L. parva* (Holmgren, 1869) (from Canada, Kuujjuarapik). **D.** *L. pearyi* sp. n. (holotype). Scale 0.1 mm.

BIN. BOLD:AAL7874.

Remarks. The barcoded male of *Lycoriella nivicola* **sp. n.** from Greenland with the specimen ID GRPV15 (Wirta *et al.* 2016) was identified by us and is designated as a paratype (see above). However, 225 further barcoded specimens with the BIN BOLD:AAL7874 are found on BOLD, collected in N.E. Greenland (56), the United States (1) [Alaska] and Canada (168) [Alberta, British Columbia, Manitoba, Newfoundland and Labrador, Northwest Territories, Nunavut Territory, Quebec, Saskatchewan, Yukon Territory].

Discussion. *Lycoriella nivicola* resembles *L. suboptica* Mohrig & Mamaev, 1990, described from one specimen from the European part of Russia, in having a similar structure of the eye bridge, maxillary palpus and antenna (narrow eye bridge with one or two rows of facets, a thickened 1st palpal segment with a large, deep sensory pit, 2nd and 3rd palpal segments short, and rather long antennal flagellomeres). *Lycoriella nivicola* has a large, distinct intergonocoxal lobe with about 20 setae, whereas *L. suboptica* has the lobe short with 10–12 setae. In *L. nivicola*, the medial margin of the gonostylus is less impressed than that in *L. suboptica* (therefore in the former the gonostylus is broader, especially in its apical half). *Lycoriella nivicola* has seven to ten hyaline gonostylar megasetae (only four-five mentioned for the holotype of *L. suboptica*), those close to the apical tooth much much shorter than the others. Furthermore, the new species has a very variable C-w index (0.48–0.66; about 0.66 in *L. suboptica*), the halter is pale (brown in *L. suboptica*), and the colour of setae on mesonotum, scutellum and abdomen is pale (dark in *L. suboptica*).

Etymology. The name is derived from the Latin words *nivis*, snow, and *-cola*, inhabitant, referring to the cold habitats of the species.

Lycoriella pearyi **sp. n.**

Figs 8B, 9D

Material studied. *Holotype male.* N. GREENLAND, Nedre Midsommer Sø, 82.0980°N, 35.9498°W, 14.VII.1966, Canadian Peary Land Expedition (in MZH, <http://id.luomus.fi/GE.1822>).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2 facets wide. Face with about 20 setae. Clypeus with 2 setae. Maxillary palpus with 2 segments (2nd and 3rd segments partly fused); 1st segment with 4 setae, with large dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 2.3x as long as wide, neck shorter than wide, longest setae longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 4 setae. Proepisternum with 7 setae. Scutellum with 2 long and some short and fine setae. **Wing** (in poor condition in the specimen studied). Hyaline. Length 1.9 mm. Width/length and anal lobe not detectable in the specimen studied. Veins distinct, except for stM. c/w 0.65. Halter yellow. **Legs.** Brown; setae pale. Fore tibial organ forming large patch of setae in demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and moderately sized. **Hypopygium** (Fig. 8B). Pale brown, like abdomen. Intergonocoxal area moderately long, with wide setose lobe. Gonocoxa wide, longer than gonostylus, with sparse setosity, shortest in apical fourth. Gonostylus (Fig. 9D) long and narrow, apically narrowed, weakly impressed; with short setosity, densely setose apically, with strong apical tooth, 9–10 megasetae medially, megasetae straight, shorter than apical tooth; with well-differentiated whip-lash seta on basal third of gonostylus. Tegmen longer than wide, roundish apically, straight laterally, weakly sclerotized, with small area of tiny aedeagal teeth. Aedeagal apodeme long and strong.

BIN. Unknown.

Discussion. In having the maxillary palpus 2-segmented, *Lycoriella pearyi* **sp. n.** resembles *L. felix* (Schmitz, 1919) described from the Netherlands, *L. deserticola* Mohrig & Mamaev, 1983, described from Uzbekistan, and *L. stylata* Mohrig & Mamaev, 1985, described from the European part of Russia, all of which may have the palpus either three- or two-segmented. *Lycoriella pearyi* is similar to *L. felix*, and differs from *L. deserticola* and *L. stylata* in having a distinct intergonocoxal lobe and five megasetae on the apical half of its gonostylus, whereas the other species have at most a row of setae on the intergonocoxal area and two or three subapical gonostylar megasetae. *Lycoriella pearyi* differs from *L. felix* in having the eye bridge continuous, with two to three rows of facets, a normal, not a very narrow wing, and an undivided intergonocoxal lobe, whereas *L. felix* has the eye bridge broken medially, with a discontinuous single row of facets, a strongly reduced wing and distinctly two intergonocoxal lobes. The hypopygium of *Lycoriella pearyi* is very similar to that of *L. nivicola* **sp. n.** but the latter can be distinguished by its

two-segmented palpus, narrower gonostylus which is more evenly narrowed towards apex, in having the gonostylar megasetae relatively longer, and in being smaller (wing length 1.9 *versus* 2.1–2.5 mm).

Etymology. The species is named after the polar explorer Robert Edwin Peary (1856–1920), one of the pioneers in the study of Greenland.

Lycoriella taimyrensis sp. n.

Figs 10A, 11A, 13E

Material studied. *Holotype male.* RUSSIA, Krasnoyarsk region, Taimyr Nature Reserve, Aru-Mas, 72.50°N, 101.94°E, pan trap, 9–20.VII.2010, A. Barkalov (in ISEA). *Paratypes.* RUSSIA, Krasnoyarsk region, Taimyr Peninsula, on River Zakharova Rassokha, 72.70°N, 101.08°E, pan trap, 1–10.VII.2011, A. Barkalov, 3 males (2 in MZH, <http://id.luomus.fi/GE.1793> and <http://id.luomus.fi/GE.1794>; 1 in SDEI).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2 facets wide, medially narrowed and without facets. Face with 16 setae. Clypeus with 2 setae. Maxillary palpus with 3 segments, 1st segment as long as 3rd segment, 2nd segment shortest; 1st segment with 6 setae, with large dorsal pit with setae; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 1.45–1.55x as long as wide, neck shorter than wide, longest setae shorter than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 5 setae. Proepisternum with 5 setae. Scutellum with 2 long and some short and fine setae. **Wing.** Fumose. Length 1.4–1.5 mm. Width/length 0.45. Anal lobe small. Veins distinct, except for stM. c/w 0.65–0.70. R1/R 0.60–0.70. stM slightly longer than fork of M. bM and r-m subequal in length, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Yellow. Fore tibial organ forming moderate indistinct patch of sensilla in poorly demarcated depression. Fore tibial spur slightly shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and short. **Hypopygium** (Fig. 10A). Brown, like abdomen. Intergonocoxal area moderately long, with wide setose lobe. Gonocoxa wide, longer than gonostylus, with sparse, rather long and fine setosity. Gonostylus (Fig. 11A) widest basally, strongly narrowed towards apex, slightly impressed medially; densely setose apically, with strong apical tooth, with 4–5 short hyaline megasetae medially and dorsally very near apical tooth, 8–9 long and narrow megasetae on high basal bodies in a dense group more basally near whip-lash seta. Tegmen (Fig. 13E) wider than long, smoothly curved apically, weakly sclerotized, with small teeth apicolaterally; straight laterally, with strongly sclerotized apodemes, with small area of minute aedeagal teeth. Aedeagal apodeme short and strong.

BIN. Unknown.

Discussion. Unlike any other known *Lycoriella* species, *Lycoriella taimyrensis* sp. n. and *L. tundrae* sp. n. have some short but strong and well-sclerotized teeth-like structures laterally on their tegmen, the former in an apicolateral position (Fig. 13E), the latter in a basolateral position (Fig. 13F). *Lycoriella taimyrensis* has its tegmen relatively broader, with straighter lateral sides and with stronger apodemes, its gonostylus and gonocoxa wider, its gonostylus with more megasetae, including apical ones (lacking in *L. tundrae*) and the setae of its intergonocoxal lobe weaker and more numerous. See also under *Lycoriella eurystylata* sp. n. and *L. jakovlevi* sp. n.

Etymology. The species is named after the area where the collection localities are situated, the Taimyr Peninsula in northern Siberia.

Lycoriella tundrae sp. n.

Figs 10B, 11B, 13F, 14D

Material studied. *Holotype male.* RUSSIA, Krasnoyarsk region, Taimyr Peninsula, on River Zakharova Rassokha, 72.70°N, 101.08°E, pan trap, 1–10.VII.2011, A. Barkalov (in ISEA). *Paratype.* RUSSIA, Krasnoyarsk region, Taimyr Nature Reserve, Aru-Mas, 72.50°N, 101.94°E, pan trap, 9–20.VII.2010, A. Barkalov (in MZH, <http://id.luomus.fi/GE.1823>).

Description. Male. **Head.** Face and antenna concolorous brown, maxillary palpus pale brown. Eye bridge 2–3 facets wide. Face with 28–31 setae. Clypeus with 2–3 setae. Maxillary palpus with 3 segments, 1st and 3rd segments subequal in length, 2nd segment shortest; 1st segment with 2–5 setae, with deep dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 1.5–1.6x as long as wide, neck shorter than

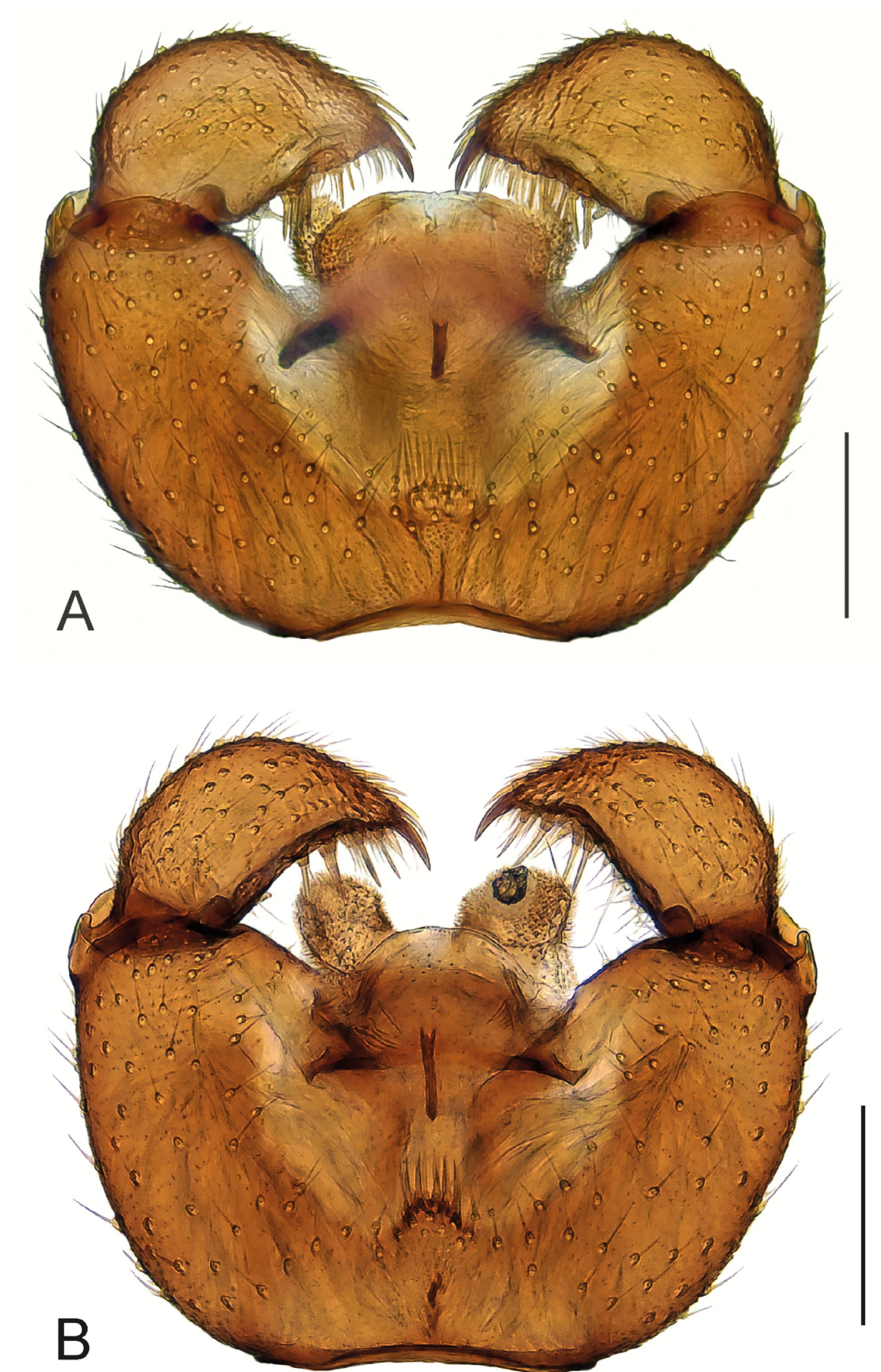


FIGURE 10. Hypopygium, ventral. **A.** *Lycoriella taimyrensis* **sp. n.** (holotype) **B.** *L. tundrae* **sp. n.** (holotype). Scale 0.1 mm.

wide, longest setae shorter than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 5–7 setae. Proepisternum with 5–6 setae. Scutellum with 2 moderately long and some short and fine setae. **Wing.** Fumose. Length 1.4–1.5 mm. Width/length 0.45. Anal lobe small. Veins distinct, except for stM. c/w 0.65–0.70. R1/R 0.75–0.90. stM shorter than fork of M. bM longer than r-m. stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Pale brown; setae pale. Fore tibial organ forming small indistinct patch of setae in poorly demarcated depression. Fore tibial spur shorter than apical width of tibia. **Abdomen.** Pale brown; setae pale and short. **Hypopygium** (Fig. 10B). Brown, like abdomen. Intergonocoxal area (Fig. 14D) moderately long, with wide setose lobe. Gonocoxa wide, longer than gonostylus, with sparse, rather long and fine setosity. Gonostylus (Fig. 11B) widest basally, strongly tapered towards apex, slightly impressed medially; densely setose apically, with strong apical tooth, with 4–5 long and narrow medial megasetae on basal bodies on apical third of gonostylus; with long whip-lash seta in the middle. Tegmen (Fig. 13F) about as long as wide, smoothly curved apically and laterally, weakly sclerotized, with some small teeth basolaterally, apodemes strongly sclerotized, with area of small aedeagal teeth. Aedeagal apodeme short and strong.

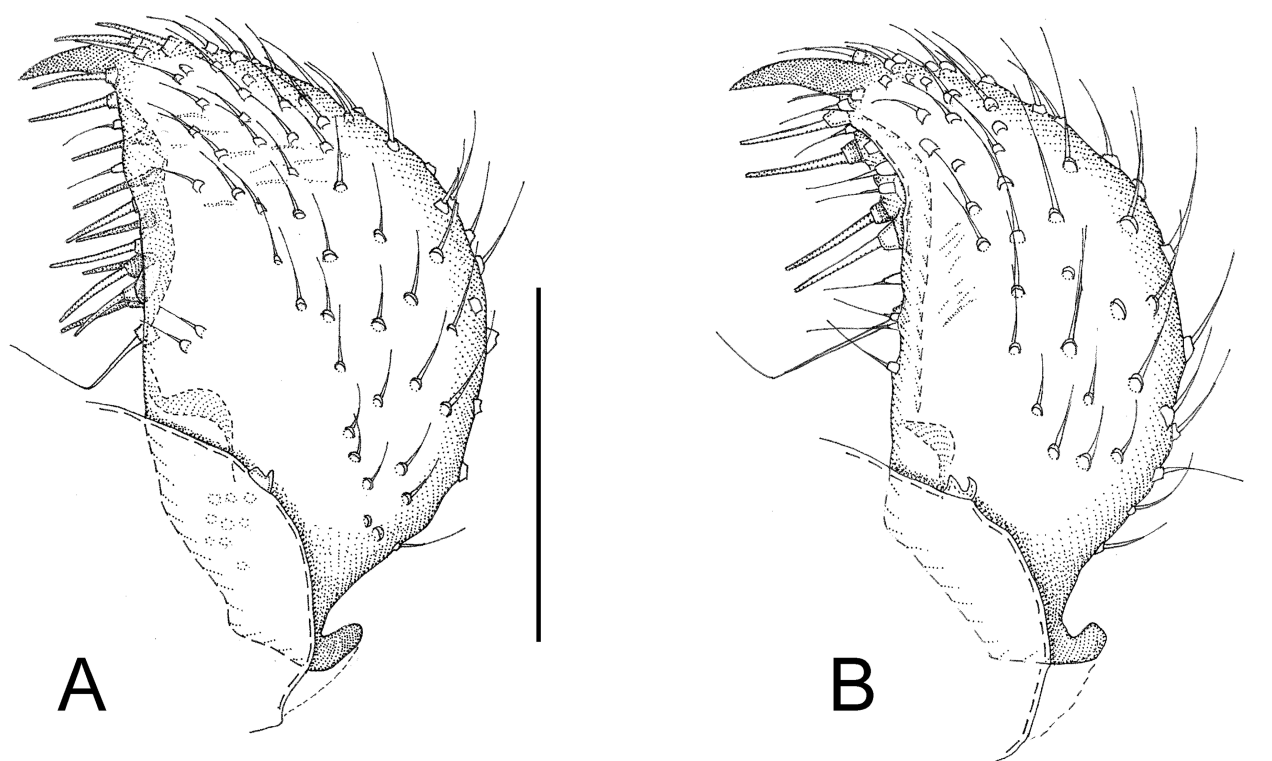


FIGURE 11. Gonostylus, ventral. A. *Lycoriella taimyrensis* sp. n. (holotype) B. *L. tundrae* sp. n. (holotype). Scale 0.1 mm.

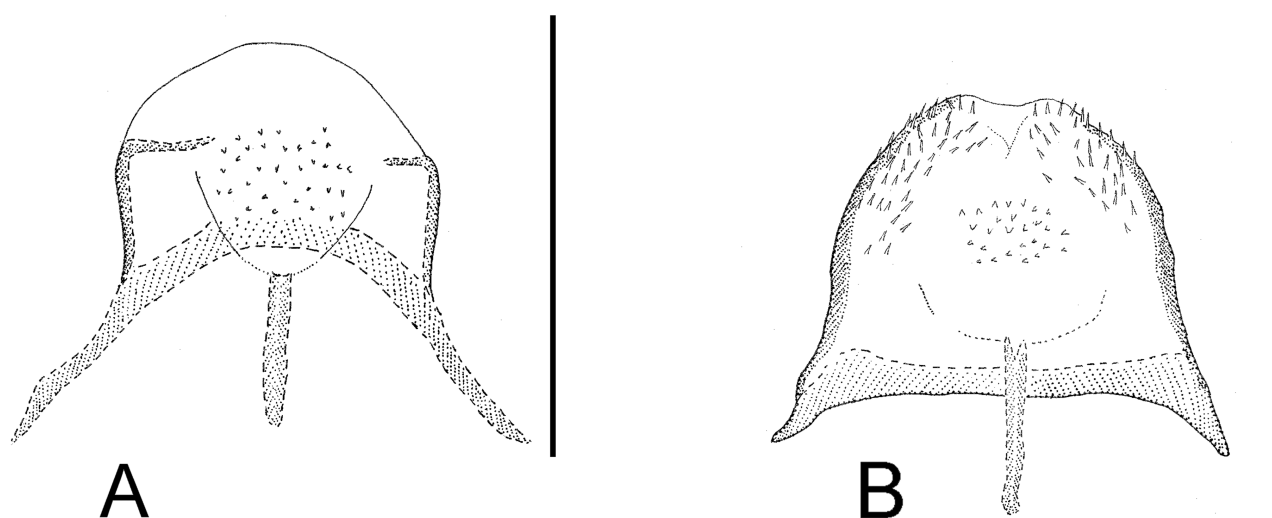


FIGURE 12. Tegmen, ventral. A. *Lycoriella ampla* sp. n. (holotype). B. *L. excavata* sp. n. (holotype). Scale 0.1 mm.

BIN. Unknown.

Discussion. See under *Lycoriella eurystylata* **sp. n.**, *L. jakovlevi* **sp. n.** and *L. taimyrensis* **sp. n.**

Etymology. The species is named after the habitat, arctic tundra, where the specimens were collected.

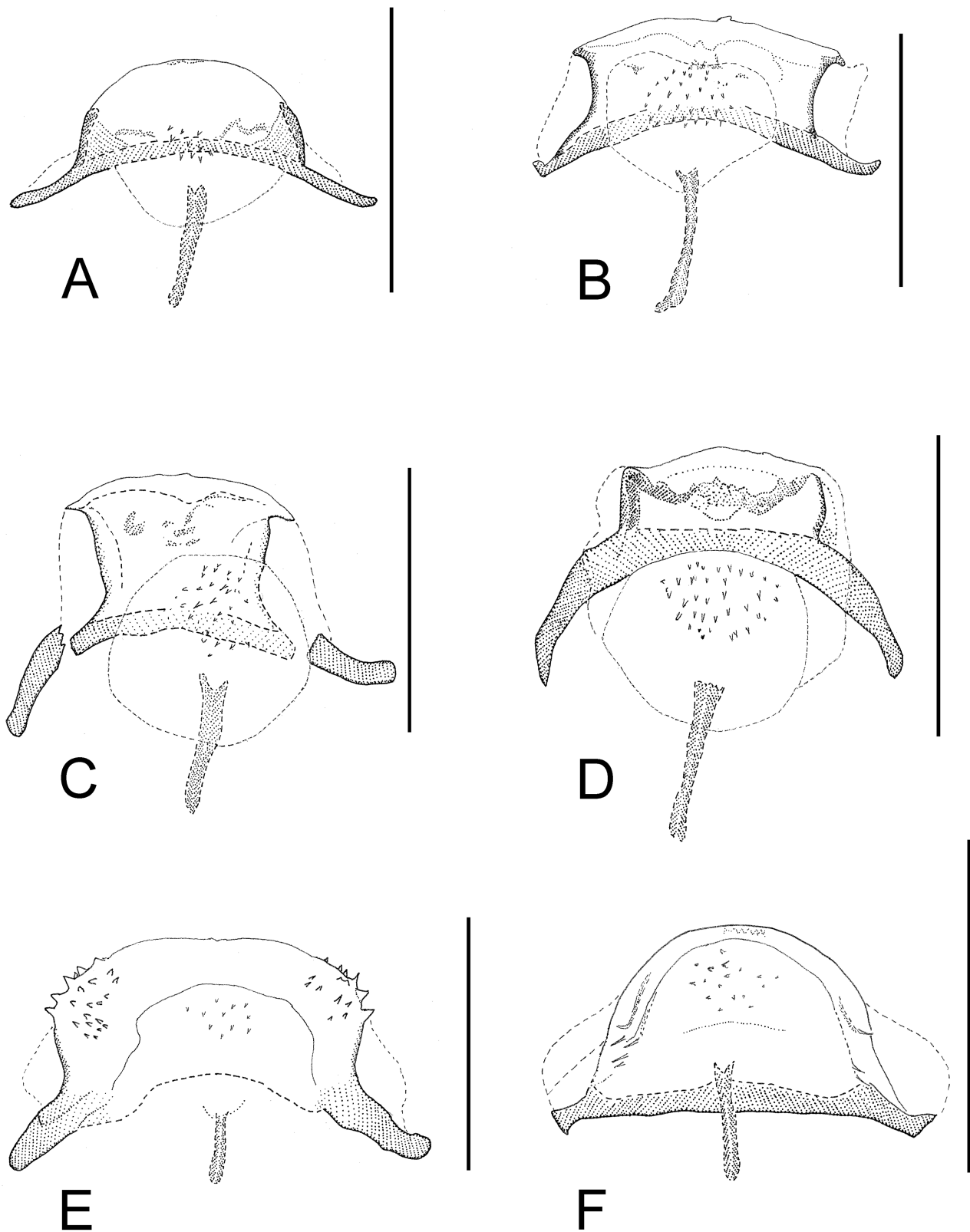


FIGURE 13. Tegmen, ventral. **A.** *Lycoriella eurystylata* **sp. n.** (holotype). **B.** *L. acutostylia* Mohrig & Menzel, 1990 (from Finland, Sadinvaara). **C.** *Lycoriella jakovlevi* **sp. n.** (paratype). **D.** *L. kinbasketi* **sp. n.** (holotype). **E.** *L. taimyrensis* **sp. n.** (holotype). **F.** *L. tundrae* **sp. n.** (holotype). Scale 0.1 mm.

Redescription

Lycoriella parva (Holmgren, 1869)

Figs 7B, 9C

Synonyms: = *curvispina* Tuomikoski, 1960; = *difficilis* var. *obscuratipes* (Frey, 1948).

Literature. *Bradysia* (*Chaetosciara*) *difficilis* var. *obscuratipes* Frey—Frey (1948): 59, 82. *Lycoriella* (*Lycoriella*) *curvispina* Tuomikoski—Tuomikoski (1960): 79, 85; figs 17e, 18j and 19d. *Lycoriella curvispina* Tuomikoski—Gerbachevskaja (1969): 339; figs 208.5 and 208.9; Krivosheina & Mohrig (1986): 157; Gerbachevskaja (1988): 514, figs 208.5 and 208.9; Jakovlev (1994): 76; Rudzinski (1994): 286. *Sciara parva* Holmgren—Holmgren (1869): 16, 52; Jacobson (1898): 204; Lengersdorf (1930): 56; Edwards (1935): 535, fig. 1d; Bertram & Lack (1938): 51. *Lycoria* (*Neosciara*) *parva* (Holmgren)—Lengersdorf (1928–30): 65. *Bradysia* (*Bradysia*) *parva* (Holmgren)—Frey (1948): 67, 85; Stone & Laffoon (1965): 234. *Bradysia parva* (Holmgren)—McAlpine (1964): 128. *Lycoriella* (*Lycoriella*) *parva* (Holmgren)—Tuomikoski (1967): 49; Gerbachevskaja-Pavluchenko (1986): 33; Menzel & Mohrig (2000): 385, 398, 611; Coulson & Refseth (2004): 113; Menzel *et al.* (2006): 114; Coulson (2008): 162; Coulson (2013): 154; Mohrig *et al.* (2013): 271. *Lycoriella parva* (Holmgren)—Heller *et al.* (2009): 42; Salmela *et al.* (2015): 87; Vilkamaa & Menzel (2019): 52; Menzel *et al.* (2020): 66.

Material studied. CANADA, Quebec, Kuujuarapik, 55°17'N, 77°48'W, 150 m, hilltop, lichen-*Sphagnum*, 16.VII–3.VIII.1990, S. Koponen, 3 males (in MZH, <http://id.luomus.fi/GE.1778>, <http://id.luomus.fi/GE.1779> and <http://id.luomus.fi/GE.1780>); same locality but treeline forest, window trap, 27.VII–10.VIII.1990, S. Koponen, 1 male (in MZH, <http://id.luomus.fi/GE.1781>); Quebec, Mt. Logan, 48°52'N, 66°38'W, 1100 m, alpine zone, S. Koponen, 3 males (in MZH, <http://id.luomus.fi/GE.1782>, <http://id.luomus.fi/GE.1783> and <http://id.luomus.fi/GE.1784>); RUSSIA, Murmansk Province, Lapland Nature Reserve, 5 km SE of Chunozero settlement (67.64169°N, 32.68118°E), Malaise trap, 30.V–23.VI.2014, A. Polevoi, 1 male (in MZH, <http://id.luomus.fi/GE.1777>); USA, Vermont, Mt. Mansfield, 44.5436°N, 66.6347°W, 4000 ft., alpine zone, 18.VI–18.VIII.1991, S. Koponen, 10 males (8 in MZH, <http://id.luomus.fi/GE.1785>–1792; 2 in SDEI); New Hampshire, Mt. Washington, 44.2705°N, 71.3032°W, 5700 ft., alpine zone, 15.VI–17.VIII.1991, S. Koponen, 3 males (in MZH, <http://id.luomus.fi/GE.1795>, <http://id.luomus.fi/GE.1796> and <http://id.luomus.fi/GE.1797>).

Redescription. Male. **Head.** Face slightly darker brown than antenna, maxillary palpus pale brown. Eye bridge 2 facets wide. Face with 11–24 setae. Clypeus with 1–3 setae. Maxillary palpus with 3 segments, 1st segment slightly longer than 3rd segment, 2nd segment shortest; 1st segment with 2–5 (rarely 6) setae, with large dorsal pit with sensilla; surface of antennal flagellomeres smooth, body of 4th antennal flagellomere 1.85–2.35x as long as wide, neck slightly shorter than wide, longest setae as long as or slightly longer than width of flagellomere. **Thorax.** Brown; setae pale. Anterior pronotum with 2–4 setae. Proepisternum with 4–7 setae. Scutellum with 2 long and some short and fine setae. **Wing.** Fumose. Length 1.2–1.4 mm. Width/length 0.35–0.40. Anal lobe small. Veins indistinct. c/w 0.55–0.70. R1/R 0.60–0.85. stM longer than fork of M. bM longer than r-m, stCuA shortest. bM and r-m non-setose. Halter yellow. **Legs.** Fore coxa yellow, mid- and hind coxae pale brown, other segments yellow; setae pale. Fore tibial organ forming small patch of setae in demarcated depression. Fore tibial spur longer than apical width of tibia. **Abdomen.** Yellow; setae pale, short and fine. **Hypopygium** (Fig. 7B). Yellow, like abdomen. Intergonocoxal area rather long, with large conical setose lobe. Gonocoxa narrow and long, longer than gonostylus, with rather sparse and short setosity, on medial margin very short. Gonostylus (Fig. 9C) very narrow, widest basally, narrowed in apical third, impressed on apical half, evenly narrowed towards apex, densely setose apically, with narrow and curved apical tooth; with 2–3 apical megasetae, 4 (rarely 5) medial megasetae in apical third, megasetae rather strong, slightly recurved, about as long as apical tooth; without well-differentiated whip-lash seta. Tegmen wider than long, membranous and smoothly curved or truncate apically, slightly sclerotized and roundish laterally, with small area of aedeagal teeth. Aedeagal apodeme rather short.

BIN. BOLD:ABAS291.

Discussion. There is some variation in the structure of the gonostylus between specimens from different localities, the northernmost specimens studied by us (Kuujuarapik, Quebec) having a narrower gonostylus than the specimens from the more southern Mt. Logan, Mt. Mansfield and Mt. Washington (Figs 7B, 9C). However, as even the European and North American specimens have the same DNA barcode—e.g., specimens with the IDs 24536-E11 from Norway (Vestvold) and BIOUG11301-E11 from Canada (Newfoundland and Labrador)—they most probably belong to one and the same species. With the character combination of the gonostylus with strong apical megasetae, few curved medial megasetae, an indistinct whip-lash seta and a strong intergonocoxal lobe,

Lycoriella parva is unique among *Lycoriella*. The species has been recorded from Austria, Canada, Finland, Norway (mainland and Svalbard), Russia, Sweden and United Kingdom (Wirta *et al.* 2016; Heller & Menzel 2017; Menzel *et al.* 2020; BOLD Systems 2021).

New records

Lycoriella acutostylia Mohrig & Menzel, 1990

Figs 4A, 13B, 14A

Literature. *Lycoriella* (*Lycoriella*) *acutostylia* Mohrig & Menzel—Menzel *et al.* (1990): 340, fig. 7a–c; Menzel & Mohrig (2000): 385, 611. *Lycoriella acutostylia* Mohrig & Menzel—Menzel *et al.* (2000): 77; Mukkala *et al.* (2005): 7, 16, 32; Heller *et al.* (2009): 41; Vilkamaa & Menzel (2019): 51.

Material studied. CZECH REPUBLIC, Bílina, Vétrak, 50°33'29"N, 13°45'57"E, dump restoration SW, 200 m, 8–10.VI.1997, M. Barták, 1 male (in SDEI); same data but 9–23.IV.1997, 2 males (in SDEI). FINLAND, Lkor (Lapponia kemensis orientalis), Pelkosenniemi, Kemihaara, Sadinvaara (Grid 7445310:3537269), Malaise trap, 31.VII–29.IX.2015, J. Salmela, 3 males (in LMM; specimen IDs JS-COI-2016-0011, JS-COI-2016-0012 and JS-COI-2016-0242); Ks (Regio kuusamoensis), Kuusamo, Matinjärvi (Grid 7367909:3615372), Malaise trap, 1.VII–3.VIII.2005, J. Salmela, 1 male (in MZH, <http://id.luomus.fi/GE.1824>); Ab (Regio Aboensis), Karkkila, Iilampi, rich fen, Malaise trap, 6.VI.2004, J. Salmela, 1 male (in LMM).

BIN. BOLD:ACV2466.

Lycoriella brevipila Tuomikoski, 1960

Literature. *Lycoriella* (*Lycoriella*) *solani* (Winnertz)—Menzel & Mohrig (1991): 40 [misidentification]. *Lycoriella* (*Lycoriella*) *ingenue* (Dufour)—Menzel & Mohrig (2000): 394, 611 [in part misidentification; only *brevipila* Tuomikoski as junior synonym of *ingenue* (Dufour)]; Pakalniškis *et al.* (2006): 62 [misidentification]. *Lycoriella* (*Lycoriella*) *brevipila* Tuomikoski—Tuomikoski (1960): 79, 82, figs 18b and 20b; Gerbachevskaja-Pavluchenko (1986): 32; Vilkamaa & Hippa (1999): 210, 241, fig. 20; Pakalniškis *et al.* (2000): 16; Menzel & Heller (2007): 220; Vilkamaa & Hippa 2011: 58, fig. 3. *Lycoriella brevipila* Tuomikoski—Hackman (1963): 15, 22, 26, 31, 33, 43, 47, 49 and 55; Lindroth *et al.* (1973): 24; Dobat (1975): 356; Gerbachevskaja (1969): 339, fig. 208.8; Gerbachevskaja-Pavluchenko (1986): 33; Gerbachevskaja (1988): 513, fig. 208.8; Rudzinski (1989): 72; Rudzinski (2003): 194; Heller *et al.* (2009): 41; Salmela *et al.* (2015): 87; Menzel (2018): 424; Vilkamaa & Menzel (2019): 51; Menzel *et al.* (2020): 64.

Material studied. RUSSIA, Chukotka, bank of river Anadyr, 64.72°N, 175.21°E, 25.VI–19.VII.2014, A. Barkalov, 6 males (3 in MZH, <http://id.luomus.fi/GE.1798>, <http://id.luomus.fi/GE.1799> and <http://id.luomus.fi/GE.1807>; 1 in ISEA; 2 in SDEI); Arkhangelsk Oblast, Yamalo-Nenets Autonomous District, near Seyakh, 70.7788°N, 72.0750°E, nival meadow, Malaise trap, 13–29.VII.2014, N. Zubryi, 1 male (in MZH, <http://id.luomus.fi/GE.1800>).

BIN. BOLD:ACC1679, BOLD:ACO1394, BOLD:ACP4705, [? BOLD:AAM9236].

Remarks. *Lycoriella brevipila* Tuomikoski, 1960 was often confused with *Lycoriella ingenue* (Dufour, 1839) in the past (e.g., in Menzel & Mohrig 2000) because the male genital structures are very similar. The specimens identified as '*Lycoriella brevipila*' so far with pale setose flagellomeres, thorax, abdomen and male genital are almost certainly still a mixture of species whose morphological differences have not yet been sufficiently studied. The genetic diversity indicates that extensive taxonomic work remains to be done in this complex of very similar species. Thus, the Canadian specimens with BIN BOLD:AAM9236 could possibly correspond to *Lycoriella pearyi* sp. n. (Figs 8A, 9D). There are currently 58 specimens on BOLD that have been assigned to *Lycoriella brevipila*. Their COI sequences form 4 clusters with the BIN IDs BOLD:AAM9236 (27 specimens from Canada), BOLD:ACC1679 (5 from Belarus, Finland, Norway), BOLD:ACO1394 (16 from Belarus, Norway, Sweden), and BOLD:ACP4705 (10 from Belarus and Norway). The time-consuming verification of the discussed BINs by morphological studies on the corresponding specimens is postponed to a later date. There are almost certainly other species in this complex that do not belong to *Lycoriella brevipila* Tuomikoski.

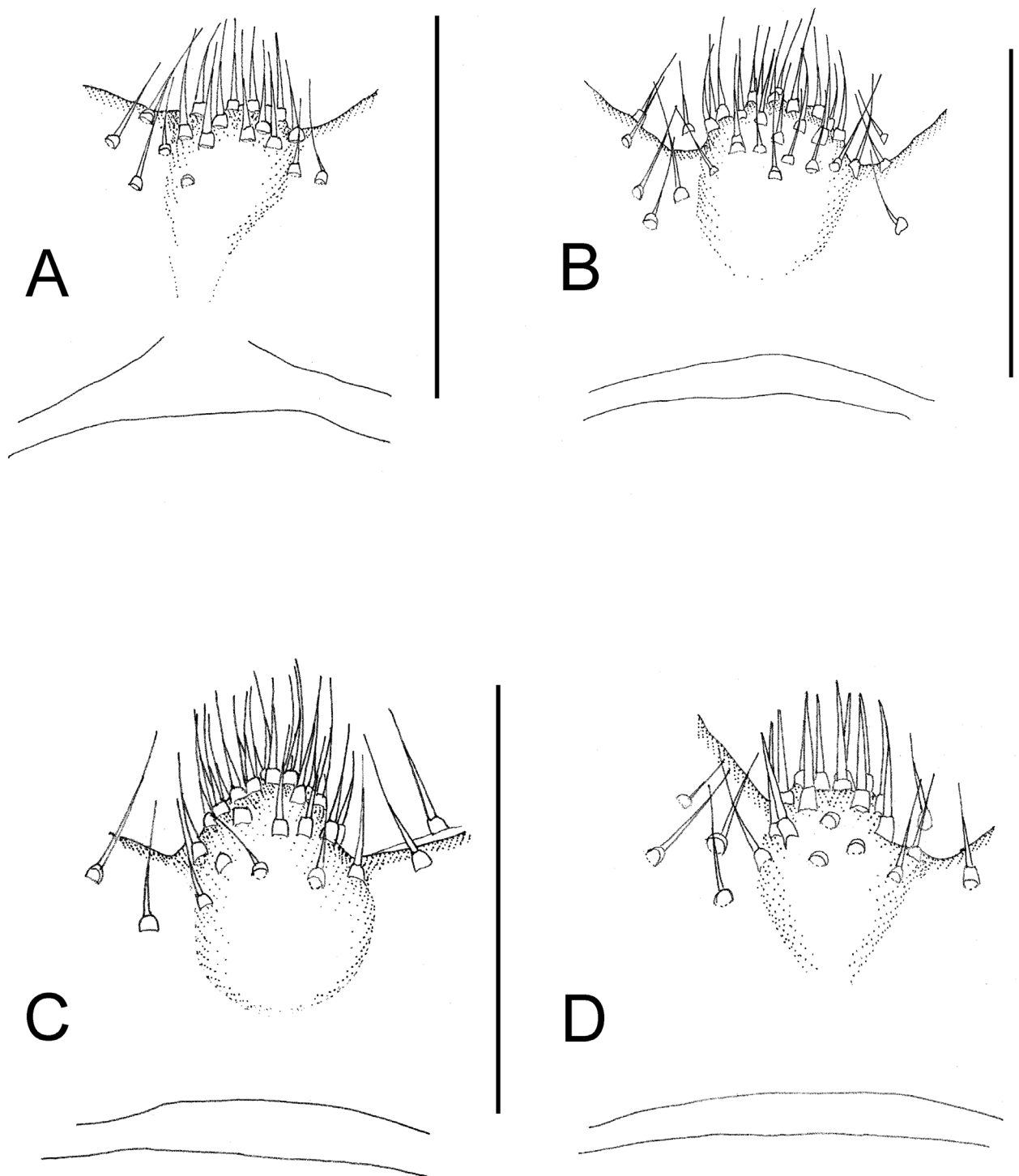


FIGURE 14. Intergonocoxal area, ventral. **A.** *Lycoriella acutostylia* Mohrig & Menzel, 1990 (from Finland, Matinjärvi). **B.** *L. jakovlevi* **sp. n.** (holotype). **C.** *L. kinbasketi* **sp. n.** (holotype). **D.** *L. tundrae* **sp. n.** (holotype). Scale 0.1 mm.

Lycoriella lundstromi (Frey, 1948)

Selected literature. *Bradysia* (*Chaetosciara*) *lundströmi* Frey [correctly *lundstromi*]—Frey (1948): 60, 80, plate 12, fig. 69. *Lycoriella* (*Lycoriella*) *lundstroemi* (Frey) [correctly *lundstromi*]—Tuomikoski (1960): 81, 87, fig. 20g. *Lycoriella lundstroemi* (Frey) [correctly *lundstromi*]—Hackman 1963: 26; Gerbachevskaja (1969): 340; Gerbachevskaja (1988): 516. *Lycoriella* (*Lycoriella*) *lundstromi* (Frey)—Gerbachevskaja-Pavluchenko (1986): 33; Freeman (1983): 31, fig. 103; Menzel *et al.* (1990): 342; Menzel & Mohrig (2000): 385, 398, 611; Salmela & Vilkamaa (2005): 291; Menzel *et al.* (2006):

113; Vilkamaa *et al.* (2007): 228; Kolcsár & Heller (2019): 294. *Lycoriella lundstromi* (Frey)—Heller *et al.* (2009): 42; Vilkamaa & Menzel (2019): 52.

Material studied. USA, Alaska, 11 mi S Anderson Jct, Rte 3, mi 270, forest (alder, poplar, spruce), Malaise trap, 23.VI–11.VIII.1984, S. & J. Peck, 1 male (in MZH, <http://id.luomus.fi/GE.1803>).

BIN. BOLD:ACC1227.

Remarks. New for the Nearctic region. On BOLD, there are currently registered 50 specimens with four public BINs: 5 with the ID code BOLD:ACC1227 (Germany, Finland), 35 specimens with BOLD:ACG8695 (Canada, Finland), 9 with BOLD:ACG4621 (Belarus, Germany, Norway), and one single female in poor condition from Bulgaria with BOLD:ACP4988 (not verifiable without a male).

Certainly, there may be more species in their morphology very similar to *Lycoriella lundstromi* (Frey), lacking the intergonocoxal lobe or seta groups.

Lycoriella sativae (Johannsen, 1912)

Synonyms often used: = *castanescens* (Lengersdorf, 1940); = *fucorum* (Frey, 1948).

Selected literature. *Lycoriella (Lycoriella) auripila* (Winnertz) sensu Tuomikoski—Tuomikoski (1960): 82, 88, figs 17g, 18d and 20d; Freeman (1983): 31; figs 93 and 102 [both misidentification]. *Lycoriella auripila* (Winnertz) sensu Tuomikoski—Santini & Lucchi (1994): 15, figs 1, 9a–b, 16 and plate 1, fig. A [misidentification]. *Bradysia (Chaetosciara) fucorum* Frey—Frey (1948): 60, 80, plate 12, fig. 68. *Lycoriella (Lycoriella) fucorum* (Frey)—Tuomikoski (1960): 82, 88, figs 18c and 20c; Gerbachevskaja-Pavluchenko (1986): 33; Menzel *et al.* 1990: 341. *Neosciara castanescens* Lengersdorf—Lengersdorf (1940): 28, fig. 11. *Lycoriella (Lycoriella) castanescens* (Lengersdorf)—Menzel & Mohrig (2000): 385, 386, 657, figs 56, 71b and 353–355; Menzel *et al.* (2006): 108; Shin *et al.* (2013): 837, fig. 2; Kolcsár & Heller (2019): 294. *Lycoriella castanescens* (Lengersdorf)—Heller *et al.* (2009): 42. *Sciara sativae* Johannsen—Johannsen (1912): 121, 133, plate 3, fig. 120 and plate 6, fig. 240. *Lycoriella (Lycoriella) sativae* (Johannsen)—Menzel *et al.* (2013): 292, 293, figs 20 and 21; Mohrig *et al.* (2013): 216, fig. 39a–d. *Lycoriella sativae* (Johannsen)—Steffan (1966): 51, 54; Heidari Latibari *et al.* (2016): 41, 42, fig. 1; Broadley *et al.* (2018): 204, 216, fig. 6A–D; El Ouazzani *et al.* (2019): 384, fig. 6A–D; Vilkamaa & Menzel (2019): 52, 65; Menzel *et al.* (2020): 67.

Material studied. RUSSIA, Krasnoyarsk region, Taimyr Nature Reserve, Aru-Mas, 72.50°N, 101.94°E, pan trap, 9–20.VII.2010, A. Barkalov, 1 male (in MZH, <http://id.luomus.fi/GE.1801>); Krasnoyarsk region, Taimyr Peninsula, on River Zakharova Rassokha, 72.70°N, 101.08°E, pan trap, 1–10.VII.2011, A. Barkalov, 2 males (in ISEA and SDEI); Russia, Chukotka, bank of river Anadyr, 64.72°N, 175.21°E, 25.VI–19.VII.2014, A. Barkalov, 1 male (in MZH, <http://id.luomus.fi/GE.1802>).

BIN. BOLD:ABA1215.

Remarks. In the BOLD database were found 1039 COI-sequenced specimens with the BIN ID BOLD:ABA1215. These were collected from the following regions and countries: *PALAEARCTIC*: Austria, Belgium, Belarus, Bulgaria, China, Germany, Norway, Russia (Primorskiy Kray), South Korea; *NEARCTIC*: Canada, United States; *AFROTROPICAL*: South Africa; *SUBANTARCTIC*: French Southern and Antarctic Lands (Kerguelen Island); *AUSTRALASIA*: Australia, New Zealand. Thirty-seven other specimens named *Lycoriella sativae* are recorded with BIN IDs BOLD:ACD3588 (13 specimens from Canada, Norway, Sweden), BOLD:ACM4797 (21 from Canada, Iran, Pakistan), as well BOLD:ACR0675 (3 from Norway and Russia: Primorskiy Kray). Representatives of these clusters must be subjected to a morphological review.

Lycoriella suboptica Mohrig & Mamaev, 1990

Literature. *Lycoriella (Lycoriella) suboptica* Mohrig & Mamaev—Mohrig, Krivosheina & Mamaev (1990): 16, fig. 5a–d; Menzel & Mohrig (2000): 385, 611. *Lycoriella suboptica* Mohrig & Mamaev—Vilkamaa & Menzel (2019): 52.

Material studied. RUSSIA, Krasnoyarsk region, Taimyr Nature Reserve, Aru-Mas, 72.50°N, 101.94°E, pan trap, 9–20.VII.2010, A. Barkalov, 1 male (in SDEI); RUSSIA, Krasnoyarsk region, Taimyr Peninsula, on River Zakharova Rassokha, 72.70°N, 101.08°E, pan trap, 1–10.VII.2011, A. Barkalov, 1 male (in ISEA), RUSSIA, Krasnoyarsk region, Taimyr Peninsula, 12.5 km S of Dixon, 73°24'N, 80°39'E, on the River Lemberova, pan trap,

7–10.VII.2012, A. Barkalov, 2 males (1 in MZH <http://id.luomus.fi/GE.1804>; 1 in SDEI); RUSSIA, Yamalo-Nenets Autonomous Okrug, 13–29.VII.2014, N. Zubryi, 1 male (in MZH, <http://id.luomus.fi/GE.1805>); N. Greenland, Nedre Midsommer Sö, 62.0980°N, 35.9498°W, 14.VII.1966, Canadian Peary Land Expedition, 1 male (in MZH, <http://id.luomus.fi/GE.1806>).

BIN. Unknown.

Conclusion

Of *Lycoriella* Frey, only 7 species had been recorded from the Nearctic and 34 from the Palaearctic regions up till now (Menzel & Mohrig 2000, Mohrig *et al.* 2013, Vilkamaa & Menzel 2019). The twelve newly described species increase the number of known *Lycoriella* species by 24% to 50. Mostly, this increase involves the Nearctic sciarid fauna, which generally is much more poorly known than the Palaearctic fauna. 16 species are now known from the Nearctic and 38 from the Palaearctic (Vilkamaa & Menzel 2019; this study).

Part of the new species represent the typical structural form of *Lycoriella* with a narrow gonostylus with short megasetae scattered on its medial side and with a well-developed whip-lash seta and with a normal, unmodified tegmen. Some of the new species display morphological characters which until now were unknown in the genus (*Lycoriella ampla* **sp. n.** with a voluminous gonostylus with apical megasetae, *L. canningsi* **sp. n.** with a distinctly impressed gonostylus resembling that of the genus *Stenacanthella* Vilkamaa & Menzel, 2019 and *Trichocoelina* Vilkamaa & Menzel, 2019, and *L. excavata* with a dorsally strongly excavated, subapically broad gonostylus. Five of the new species have the same unusual structural complex as *Lycoriella acutostylia* Mohrig & Menzel, 1990 with a subtriangular, medially impressed gonostylus and with a modified tegmen.

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